

AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

PERCIVAL SHELDON RIDSDALE, Editor

JULY 1920

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VOL. 26, No. 319



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Beyond its great economic value, the arecanut palm is noted for its straight height and graceful beauty. It is fittingly called "an arrow from heaven" by the Hindu poets. (See page 409)

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CHANGE OF ADDRESS

A request for change of address must reach us at least thirty days before the date of the issue with which it is to take effect. Be sure to give the old address as well as the new one.

Members desiring to discontinue membership and magazine should file formal letter of resignation at least thirty days prior to expiration of membership.

Publication Office, 522 East Street, Baltimore, Md.

Headquarters Office, Maryland Building, Washington, D. C.

Entered as second-class mail matter December 24, 1909, at the Postoffice at Baltimore, under the Act of March 3, 1879. Copyright, 1918, by the American Forestry Association. Accepted for mailing at special rate of postage provided for in Sec. 1103, Act of October 3, 1917, authorized February 27, 1920.

"HALL OF FAME" FOR TREES

Here is the oldest tree in Virginia and it is certainly entitled to a place in the Hall of Fame for trees. The nomination is made by Meade Ferguson, of Richmond. It stands in Charles City County, Virginia, and for age and size is perhaps not equalled by any on the Atlantic coast. This tree is the common Tulip or Yellow Poplar (*Liriodendron tulip-*

pera), a well known species found in the woods from Vermont to Florida. It measures twenty-seven and a half feet in circumference six feet from the ground. The base at the ground, however, is sixty feet in circumference. It is estimated to be more than five hundred years old, representing a great race of men who once held war councils around its roots have disappeared and been replaced by another race and by a new civilization. Strange wild beasts, which once lurked in its branches come no more and yet the old Octopus tree, a great piece of Nature's creation, stands as a mute reminder of the time before white men arrived in America.



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AMERICAN FORESTRY

VOL. XXVI

JULY 1920

NO. 319

EDITORIAL

NOW IS THE TIME FOR ACTION

DEPLETION of the forests of the United States within 60 to 75 years with a resultant slump in all enterprise that depends wholly, or in part, on forest products can be averted if action is taken without further delay.

While at the present rate of cutting it is agreed that the forests of the United States are sufficient for only 60 to 75 years, it is pointed out by forestry experts that if private organizations adopt logging methods that will protect young growth and leave logged-off lands in condition for forest renewal, the young trees of today will be of merchantable size when needed. This is depend-

ent on keeping fires out of the forests so that young trees will have an opportunity to grow.

Since it takes from 60 to 100 years to produce forest trees of commercial size, private owners of timber lands are not likely to be interested in forest reproduction as an investment. The relationship of timbered areas to future needs; their incentive to tourist travel; the fact that they serve as water reservoirs, etc., make the public vitally interested in seeing them continued and for this reason State and National acquirement of logged-off areas and protection of such areas against fire is proposed as the solution of the continued timber supply problem.

FOR PERPETUATION OF OUR FORESTS

DEMANDS for national and state legislation for the purpose of perpetuating our forests are made by the Forestry Committee of the American Paper and Pulp Association in a recent report. These demands are broad gauged, comprehensive and practical. They provide for:

1. Co-operation with States for forest protection, care and management and the distribution of forest planting material.
2. Classification of National Forest lands and co-operation with States in classification of private forest lands.
3. The continued acquisition of forest lands on the watersheds of navigable streams in New England, the Southern Appalachians and other suitable regions.

4. Enlarging the National Forests by exchange of timber for land.

5. Replanting devastated areas in the National Forests.

6. Continuous research and investigation in the utilization of forest resources and products.

7. The extension of the Federal Farm Loan Act to include loans for the purchase or improvement of cut-over or immature forest lands, or for holding, protecting and reforesting such lands.

It is expected that bills providing for the main features of the demands will be introduced in Congress at the next Session and that a vigorous effort will be made to secure adequate appropriations for putting the recommendations into effect.

FOREST FIRE PROTECTION IN PENNSYLVANIA

IT is not surprising that Pennsylvania, which shared with New York the leading position in timber production for 30 years and had by 1918 dropped to twentieth place, should become concerned about the protection of its remaining timber and the source of its future supply. One can read in the timber history of the State the too common story of destructive logging and extravagant waste, followed by recurrent fires. There remains but the shell of a resource capable under proper management of having met currently the ever increas-

ing demands of the State for timber products. Pennsylvania's proud record as a lumber producing State is but a memory, the highest point in production having been reached in 1899, while the production of today is that of Civil War times. From a state of independence and ability to export timber, it has passed to one of dependence upon outside sources for material to meet its expanding industrial and domestic requirements.

In an effort to bring home to the citizens of the State its critical timber situation, Governor Sproul has issued

a forest fire proclamation, calling upon them to co-operate fully in the prevention and suppression of forest fires, the arch enemy of timber. The proclamation cites the tremendous loss, direct and indirect, to which the State is subject through this factor alone, a loss which can be readily avoided by care and public support, with the eventual recovery to production of the 12,000,000 acres of forest land in the State.

Pennsylvania has thus established a precedent worthy of adoption by all timber producing States. Could a

more appropriate appeal to the people be made by an executive than for their support in stamping out the fire menace, the curse of the forests? The accomplishment of this object would go far toward the solution of our forest problems. In Pennsylvania, where natural reproduction under favorable conditions so generously follows cutting, it would constitute the first and most essential step toward enabling the State to redeem its responsibility in timber production.

THE FOREST PROBLEM

THEDORE ROOSEVELT'S remark that "The Forest Problem is in many ways the most vital internal problem of the American people today" may well be repeated and emphasized on every occasion.

No one can conceive that a man of Roosevelt's ardent patriotic nature would go out into the fields or the forests and carelessly set them afire; and yet many citizens who profess to be Americans do just this. Patriotism, should include pride in one's country's re-

sources as well as consideration for its future welfare, love of country and its institutions, and pride in achievement and in progress. A man who burns a forest shows none of these attributes.

It has been said that "a man who destroys a forest is untrue to himself—careless of the rights of his brother men—blind to the demands of posterity—scornful of the law; careless of his nation's pride, prosperity and greatness, and oblivious to the teachings of the faith he professes!"

FOREST SERVICE APPROPRIATIONS FOR 1921

FOREST Service appropriations for the fiscal year 1921 as finally agreed to by both Houses of Congress and approved by the President, amount to \$6,295,822. Careful study of the various items of appropriation does not indicate any very radical departures from the previous year. Some of the most striking include an increase of \$50,000 in the appropriation for forest products investigations; a decrease of \$28,728 in the appropriation for silvical and other forest investigations; a decrease of \$25,000 in the appropriation for reforestation on the National Forests; a decrease of \$50,000 in the appropriation for permanent improvements; an increase of \$100,000 in the special appropriation for fire fighting; an increase of \$25,000 in the item for co-operative fire protection with the States under the Weeks Law; and the introduction of a new item of \$50,000 for air patrol on the National Forests. The changes in the appropriations for forest products and forest investigations are unfortunate and needless to say, the cuts in the appropriations for reforestation and permanent improvements on the National Forests will seriously handicap the effective prosecution of these two important lines of work.

Another serious handicap which is not quite so apparent as those already mentioned is a decrease of 22 in the number of statutory clerical positions at \$900 a year. In an attempt to increase efficiency by paying salaries more nearly commensurate with the work performed, the Forest Service had suggested the dropping of 60 statutory clerical positions at \$900 and the addition of 7 positions at \$1,800, 7 at \$1,600, and 20 at \$1,500. The changes would have meant a net decrease in the appropri-

ation for statutory salaries of \$200. Congress accepted in part the proposed reduction in the number of \$900 positions, and at the same time made no increases in the number of \$1,800, \$1,600 and \$1,500 positions. Thus a reduction is made in the clerical force needed to handle the constantly growing business of the Forest Service, and the opportunity to make merited promotions and to increase efficiency by the payment of fair salaries is lost.

In the all important matter of fire-fighting, there is an increase of \$100,000 in the emergency fire fund; the appropriation of \$250,000 carried by this item does not, of course, indicate even approximately the total amount spent on fire protection. The great bulk of the expenditure for this purpose comes from other items providing for the employment of the regular forest force and for general expenses on the National Forests. While the increase in the special fund is to be welcomed as indicating some recognition by Congress of the importance of the fire problem, the amount actually appropriated is obviously too small to meet a real emergency. Should such an emergency arise, as it did in 1910, 1917, 1918 or 1919, the only recourse left to the Forest Service is to incur a deficiency. It would be much preferable from every standpoint to have the emergency fund sufficiently large to be really effective in meeting a crisis, which under unfavorable conditions is likely to occur at any time.

The addition of \$25,000 to the appropriation for co-operative fire protection with the States under the Weeks Law marks real progress. It is only to be regretted that the addition was not larger. The Secretary of Agricul-

ture in his estimates had asked for \$200,000 for this purpose, which was approved by the Senate. The House, however, cut the item to \$75,000, which was finally raised in conference to the compromise sum of \$125,000. This co-operative fire protection fund has proved an exceptionally effective means of stimulating State action and bringing about improved fire protection in the various co-operating States. No question exists as to the value of the work performed and the returns received upon investment. What is needed now is a larger appropriation of at least a million dollars and the removal of the present restriction limiting the use of the fund to forest lands on the watersheds of navigable streams.

Taking the Forest Service appropriation as a whole, the most noteworthy fact is that it has remained practically stationary for years. This means that with con-

stantly increasing costs for labor and for supplies and equipment of all sorts, the work of National Forest administration is being carried on with practically no increase in funds. When the decreased purchasing power of the dollar is taken into consideration, the work of the National Forests is being conducted for approximately half what it was a few years ago in spite of a constantly increasing volume of work. To a considerable extent, this handicap has been passed on to individual employees in the form of relatively stationary and inadequate salaries, which have failed to increase at all proportionately to the increase in the cost of living. This situation cannot continue indefinitely. Increased appropriations along all lines are vital if the Forest Service is to retain its effectiveness and the public property included in the National Forests is to be efficiently administered.

KENTUCKY'S DISGRACE

THE great and sovereign State of Kentucky occupies the unique but unenviable position of having officially abandoned, by deliberate legislative enactment, the conservation of its forests. Once endowed by nature with a forest domain of unusual richness, variety, and magnitude, it had seen these forests dwindle in extent and diminish in value and importance during the last quarter of the nineteenth and the opening decade of the twentieth century. Then it bestirred itself. It did a splendid thing in a thorough-going and practical way. In the spring of 1912 it enacted as complete and adequate a forestry law as any in the country at that time. Moreover, it followed up that enactment by securing the services of an experienced and technically trained forester to make effective the forestry work the State had set out to do.

Now just eight years afterwards, lacking a day, we find written on the statute books these words:

"Be it enacted by the General Assembly of the Commonwealth of Kentucky: That * * * all laws now in force relating to * * * the State Board of Forestry * * * are hereby expressly repealed."

Inasmuch as practically all previous forestry legislation has centered around the State Board of Forestry, this sweeping provision effectively cripples the forest work of the State. Among other things the authority to organize and maintain a forest fire warden system appears to have been abolished. If this is so, the State has forfeited its right to co-operation with the Federal Forest Service in forest fire protection under the Weeks Law. Organized forest fire protection by the State thus becomes a thing of the past, and the development of forest work along other lines is abandoned.

In an apparent attempt to save its face and to ward off some of the criticism to which it knew its action would subject it, the Assembly adopted a last-minute amendment to the repeal bill providing for a State Forester under the Commissioner of Agriculture, Labor,

and Statistics. The bill also carries a total appropriation of \$6000 for forestry work, \$3000 of which is for the salary of the State Forester. All property relating to forestry, such as maps, reports, forestry library, nursery stock, nursery utensils, and forest reserves (of which there are none), are turned over to the care of the Commissioner of Agriculture, who is to "take such steps as may be necessary or expedient for their preservation," in other words to provide for their safe keeping only.

These provisions add an ironical touch to the death-blow dealt by the Assembly to the forestry work of Kentucky. A going concern is abolished, and in its place is set up a dummy officially known as a State Forester—without authority and with a fund of \$3000 to protect and develop the forest resources of a State with some nine million acres of wooded lands! One of the earliest pioneers in forestry south of the Mason and Dixon Line thus proclaims its lack of interest in one of its most important resources and sets a precedent which it is to be hoped no other State will follow.

It is difficult to believe that the action of the Assembly represents the real sentiment of the people of Kentucky. Petty partisan politics appear rather to be the cause of so reactionary a step. It is significant that the State Board of Forestry, which was created by a Democratic administration, should have been so promptly abolished by the Republicans on their accession to power some eight years later. No serious charges of inefficiency had been brought against either the Board of Forestry or the State Forester, and even had such charges been brought and substantiated, they would not have excused any such drastic and illogical action as that taken by the Assembly. Politics, as played in America, has given similar examples of "statesmanship" before, and offers a more reasonable explanation of unreasonable legislation. How long will the people sleep while the politicians play?

WAR MEMORIALS COUNCIL

THE American Forestry Association is named a member of the War Memorials Council, just created by Newton D. Baker, the Secretary of War, which will have the work of marking and caring for the graves of the soldier dead in France, and for the beautification of the cemeteries in which they are placed. The plan is to establish "American Fields of Honor," according to Assistant Secretary Ralph Hayes, whose report was adopted following his return from France. The organizations composing the War Memorials Council are:

National Fine Arts Commission, The American Institute of Architects, The American Forestry Association, The Seven Affiliated Welfare Organizations, The Ameri-

700x900 meters) about the Romagne cemeterial plot.

4. That the American Commission on Military Remains be dissolved, by reason of the completion of its work.

5. That headstones and markers be rigorously uniform and erected by the government; and that in the making of permanent plots there be no segregation into distinctive locations on the basis of rank.

6. That an advisory War Memorials Council be appointed, having representatives from the several interested organizations and having committees on hostess houses and commemorative art designs.

7. That the War Department procure the advice of the Committee on Commemorative Art of the War Mem-



National Photo

FOR AMERICAN "FIELDS OF HONOR"

At the first meeting of the War Memorials Council, called by Newton D. Baker, the Secretary of War, the following attended: bottom row, left to right, Edward Down, Jr., the American Institute of Architects; Charles Lathrop Pack, President of the American Forestry Association; the Secretary of War; Bishop W. F. McDowell, the chairman; Col. Harry Cutler, Jewish Welfare Board; Col. C. C. Pierce, Graves Registration Division War Department; Franklin D. Olier, Commander American Legion. Back of them stand W. R. Castle, State Department; Miss Marion Vincent, Young Women's Christian Association; Miss Virginia Oakley, American Field of Honor Association; James A. Flaherty, Knights of Columbus; Ralph Hayes, assistant to the Secretary of War. In the back row: Col. Edward J. Parker, Salvation Army; Father John J. Burke, National Catholic War Council; P. S. Ridsdale, Executive Secretary American Forestry Association; W. E. Bailey, American Field of Honor Association.

can Legion, The Navy Department, The Quartermaster Corps (Cemeterial Division), The War Plans Division of the General Staff, Representatives from the families of soldier dead. Within the Council there is to be a Committee on Hostess House Service, consisting of delegates from the Welfare Organizations; and a Committee on Memorial and Decorative Art. The points in Mr. Hayes' report follow:

1. That Romagne, Belleau and Suresnes be the permanent American Fields of Honor in France.
2. That those bodies not requested to be returned be concentrated in the three locations named herein.
3. That the United States acquire perpetual rights for cemeterial purposes to a generous area (say

orials Council in matters concerning the design of statuary or structures to be erected overseas under the authority or with the collaboration of the department; and that the co-operation of this committee be available for these communities or societies wishing to consult it concerning the form of proposed war memorials.

This admirable suggestion on the part of Secretary Baker is in line with the Memorial Tree Planting and Roads of Remembrance ideas of the American Forestry Association that have been adopted everywhere. The possibilities for memorial highways and memorial tree planting in France should result in "American Fields of Honor," in which all citizens can take pride.

A CRISIS IN NATIONAL RECREATION

BY HENRY S. GRAVES

WIDESPREAD anxiety has been caused by the acute situation confronting the Government in its administration of the National Parks and other reservations which afford opportunities for recreation. The National Parks are threatened by proposals that would commercialize their natural resources. Already there are bills in Congress, well advanced toward passage, which would establish the precedent of industrial use of various resources in the Parks. There is no clear-cut policy regarding the relative functions of National Parks and National Forests, with the result that large transfers of land from the Forests to the Parks are advocated along lines that would jeopardize the whole system of National forestry. Conflicts have arisen as between the industrial and the recreation use of certain public properties. There is uncertainty regarding the real place of recreation in plans for road and trail development. The many federal activities in recreation are not adequately correlated. Friends of the recreation movement who look to the federal government for leadership and support of State and local effort are handicapped by the confusion of policies of the federal bureaus and deeply disturbed by the dangers to the National Parks created by the present legislative and administrative tendencies toward their commercialization.

It is only by the adoption of a sound national recreation policy that the public interests can be safeguarded. Such a policy should protect the integrity of the National Parks, should recognize the recreation functions of the National Forests and other permanent reservations, and

should enable the Government, through its activities on the public properties and its co-operative and educational work outside, to take the leadership in forwarding the movement for outdoor recreation throughout the country.

Within the last few years there has been a widespread and spontaneous movement for outdoor recreation. Thousands who formerly spent their vacation days abroad or at some nearby resort are traveling long distances by rail or motor to visit the mountains, lakes, and forests of our own country.

In part this movement is explained by the betterment of roads, the wide ownership of automobiles, the diversion of travel from Europe by the circumstances of the war, the advertising of our recreation opportunities, and by the prevailing prosperity. A deeper cause is the existence of a new appreciation of outdoor recreation, a new impulse to seek the wholesome environment of the hills and forests and to refresh mind and body through the vigors of mountain and camp life.

This movement is of great importance to the public, both because of the

benefits to the people that come from outdoor recreation and because there must be a large participation by the public itself to provide facilities that can be enjoyed by all. That the opportunity for relaxation, exercise, and play out of doors means a factor in public health and in meeting social problems is well recognized in our larger cities and industrial centers. Millions of dollars are being expended on municipal parks, interior squares and breathing spaces, out-of-door playgrounds, public golf links, tennis courts, ball fields, bathing beaches, and



A GLIMPSE OF GLACIER NATIONAL PARK

Our National Parks comprise some of the grandest mountain scenery in the world. These areas are dedicated to the use and enjoyment of all the people of the nation. Our country should not permit any encroachment upon them by private interests for the exploitation of natural resources. They should be kept intact in their primeval splendor.



MOUNT HOOD IN THE OREGON NATIONAL FOREST

This is one of the most beautiful of our western mountains. The Forest Service is building scenic roads and trails and improving camp grounds for visitors. Thousands of seekers of outdoor recreation visit this wonderful region every year.

the like. The benefits from such facilities in increased health, in mental stimulus, and in contentment and happiness can not be measured. The problem is absolutely basic to the social well being of our nation.

The new recreation movement reaches beyond the immediate problem of the city parks and playgrounds. It seeks to draw people to the country, to the fields, the forests, the lakes, and the mountains. It aims to afford opportunities not only for the well-to-do who can afford a long trip by rail or motor to an attractive resort, but also and especially for those of less means to have the refreshment that comes from days spent in natural woodlands and the open country.

Recreation has an important place in the new movement to enlarge the system of federal and state forest reservations and parks and to acquire woodland parks for municipalities. While the occasion for such reservations is frequently the protection of watersheds, timber production, or other public benefits, all of the areas afford opportunities for outdoor recreation. Equally true it is that recreation has an important place in the demand for a large program of road improvement and extension.

The federal Government has an important part to play in the movement for outdoor recreation. This is in part because the Nation owns large areas of forest and mountain land; in part also because many other federal activi-

ties contribute directly or indirectly to recreation. The work of the Government naturally centers in the public properties, the National Parks, National Forests, National Monuments, and wild life reservations, which include the National Game Preserves and Bird Reservations. In addition, the work of the Biological Survey in wild life conservation and of the Bureau of Fisheries in maintaining the stock of our streams are powerful factors in drawing people to the forest and field. The great work of road building under the direction of the Bureau of Public Roads is opening recreation areas heretofore inaccessible, developing highways that in themselves are objectives of the traveler, and creating by example and education an appreciation of the beautification of highways by planting and of the preservation of scenic values on and near the roads. The educational work in forestry by the Forest Service, in park development by the Park Service, in improvements of public grounds and planting about the home by the Bureau of Plant Industry, all serve to stimulate an interest in the out-of-doors, and aid in forwarding the great purpose of public health, contentment, and national efficiency that are back of the outdoor recreation movement.

A broad federal policy of recreation should include all of the permanent reservations, each performing a definite function in a comprehensive program. It should include also the various other activities, for

each contributes in a large way to national recreation.

With the great public reservations used already by millions for recreation, with extensive field organizations each performing some function in recreation development, the federal Government should take the leadership in the movement, giving its moral support to the activities of other public and private agencies, and correlating their efforts where these touch those of the central Government.

For the most part the recreation work of individual federal bureaus in their respective fields is excellent, though the lack of a central policy guiding the efforts of all in conformity to a broad national program detracts from their effectiveness. There are, however, two basic problems that are causing grave difficulties. The Government's failure to meet these with a definite and firm policy is causing confusion, retarding progress, and actually jeopardizing public interests.

Both problems relate to the National Parks. One is the question of what areas should be included in National Parks, especially when this involves the transfer of lands from existing National Forests. The second problem is whether the economic resources within the Parks shall be used for industrial purposes. The two questions are very closely related. Their solution is of far-reaching consequence, for the policy adopted will largely determine the future success of the National Park undertaking and

profoundly influence the Government's future work in recreation.

There are today eighteen National Parks located in fourteen States and Territories and comprising nearly eight million acres of land.

The one thought in the minds of the Nation in setting aside the National Parks has been to preserve the natural scenic and historic features of extraordinary interest and to make them available for all time for the enjoyment of the public. They are in a real sense reservations and should be withdrawn from industrial development. They are great public playgrounds and not places for timber operations, commercial grazing, or other industrial enterprises. It is only very recently that the question of commercializing the National Parks has been raised and there is a tendency in that direction which is very disturbing to every friend of the National Park system.

The National Forests comprise approximately 155 million acres located in 27 States and Territories. The National Forests have been set aside as permanent public reservations to safeguard and perpetuate the forests, to protect water resources, and for other general public benefits. Vast in extent, the forests contain important economic resources, such as timber, water, forage, and minerals. Situated in the mountain regions, they have scenic features of stupendous grandeur and exceptional beauty. Their forests are the home of large quantities



A CAMPING PARTY IN COLORADO

Snowmass Lake, in the Sopris National Forest affords excellent fishing, and each year is visited by campers who enjoy the high mountains. In the background is Snowmass Peak, which reaches an elevation of more than 13,000 feet. There are hundreds of superb points like this in the public forests of Colorado and elsewhere.

of game and wild life and their waters afford some of the best fishing in the country.

These various resources are protected from depredation and injury and are utilized under careful and scientific methods. The principal of coordinated use guides the handling of the different resources. Thus, in utilizing timber the sources of water are safeguarded, and the cuttings are so located that the features of scenic importance are carefully protected. Grazing is regulated in a way to prevent damage to the watersheds; and also it is correlated with the perpetuation and building up of wild life. The recreation opportunities and the wild life are regarded as important natural resources to be protected, used, and developed in correlation with the timber, grazing, waters, and minerals.

Thus there are two classes of permanent reservations side by side which are being used and developed for

ALASKA TOTEM POLES

Nothing can be more impressive than the old villages and burying grounds of the Indians, tucked away in the primeval forests of the Alexander Archipelago, in Alaska. The day of stealing these splendid tokens of a past period has happily passed, for they are now carefully guarded by our National Government.

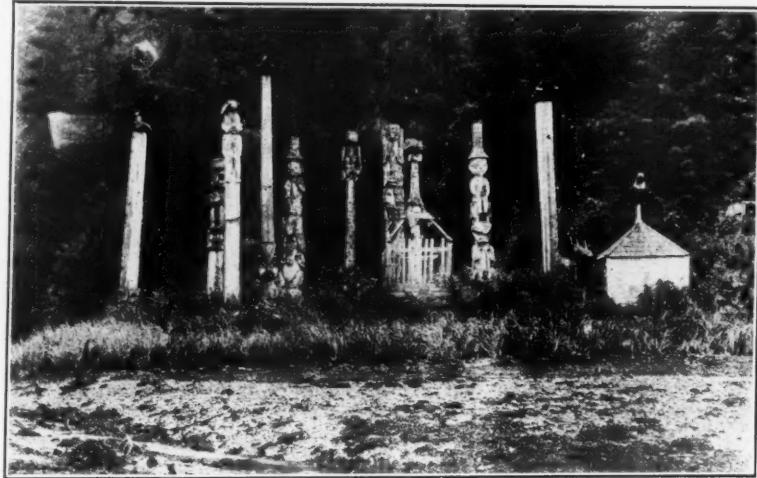
recreation. A considerable part of the general public today finds difficulty in distinguishing between parks and forests. This is because in many cases they are situated side by side in rugged mountainous regions, with very similar problems of administration and ests of the same types, and having similar prolbems of administration and development. In fact, travelers often find it impossible to determine the difference between a park and a forest on the ground except by boundary signs and survey lines. The most important National Parks of course have some feature of special interest, like a single high mountain peak, a great canyon, stupendous valley, or unique water fall. Surrounding these features there are usually areas which are very similar to extensive areas in the adjacent National Forests.

In view of the fact that the physical difference between the parks and the forests is in many cases so slight, we must look to the main differences in the purposes and policies of administration. Previously there was a clear distinction between the two classes of reservation. It was generally accepted that a National Park should be devoted wholly to park and recreation purposes and that the development of economic resources should be excluded as inconsistent with these supreme purposes. Areas on which the resources should be used for the industries would be retained in the National Forests.



RICH INDIAN RELICS IN ALASKA

The totem poles and old Indian dwellings are being protected on the Federal reservations. Old Kasaan is of special interest, and it has been set aside as a National Monument to give double assurance of its preservation. It is located on Prince of Wales Island, in the Tongass National Forest in southeast Alaska.



Recently, however, a new situation has been developing. The growth of the movement to visit our western mountains and the development work in the parks, accompanied by wide advertising of their attractions, have brought these areas into great prominence and popularity. This has stimulated the movement greatly to enlarge the National Park system, with many proposals to transfer large areas from the National Forests. At the same time the industrial development of the West has gone forward with increased intensity. Much of this development depends upon raw resources in the mountains, and within the last few years the demand for timber, forage, and water for power and irrigation on the properties owned by the Nation has increased with great rapidity. It is no longer possible to segregate great areas of mountain land without including natural resources that very soon will be needed by our industries. This industrial process has already reached a point of causing strong pressure for the use of economic resources existing within the boundaries of the present National Parks. This is expressing itself in measures in Congress for the opening of the National Parks for economic development, measures which are finding very considerable support.

In most cases the proposals for new parks involve areas within the present National Forests. Some of the proposals have been presented in the form of bills in Congress; in other cases they have been agitated by local organizations looking to later petitions to our National Legislature. Already proposals have been made for more than 30 new National Parks to be created from lands now within the National Forests, involving many

millions of acres. Some persons have even gone so far as to advocate that practically the entire crest of the Sierra Nevada and of the Cascade Mountains and other extensive areas be incorporated in National Parks. The movement has already reached a point when the policy as advocated by many would, if carried out, result in the practical partition of the National Forests, the effect of which would be very serious from the standpoint of public interests.

The movement for a great expansion of the National Parks, to be carved out of the National Forests, immediately raises the question of industrial development within the parks. The withdrawal of large areas of land from industrial use results in a great deal of local opposition. Thus, when a new National Park is proposed there are usually two local factions developed: those urging the park, often with the idea that the name will advertise the country and with the mistaken belief that there will be a larger development of scenic highways than if retained in the National Forests; and on the other side those who oppose the park because they prefer to see the timber, forage, water, and other



FISHING IN SNOWMASS LAKE, COLORADO

In our federal forests and parks there are thousands of lakes and streams that are the objective of fishermen and campers. The stocking of these waters by the Bureau of Fisheries is a valuable service in encouraging out-door recreation. Snowmass Lake is in the Sopris National Forest.

resources utilized under proper restrictions. Very commonly a compromise proposal is the result; namely, to create a park, but with provision for the utilization of the economic resources where this does not conspicuously deface the country or otherwise injure the value of the area for recreation purposes.

This sort of compromise is well illustrated in some of the bills now before Congress. Already several measures creating National Parks from National Forest areas would permit the use of the lands for the grazing of



A BAND OF MOUNTAIN SHEEP IN COLORADO

The protection and perpetuation of wild life is an important problem in our public forests and parks. Already in the Colorado National Forests the mountain sheep are increasing. A glimpse like that in the picture is worth many days of hard travel. The view was taken in the Cochetopa National Forest.

domestic stock, for developing water for power and irrigation, and even for acquiring title to land under the mining laws applicable to the public domain. I have even heard advocates of specific park proposals urge that there is no reason why the forests also should not be utilized if lumbering is confined to portions of the park not seen by tourists.

With this changing viewpoint that no longer regards a National Park as an area to be withdrawn and devoted solely to the preservation of the scenic and historic features and to recreation use, the inevitable is happening and there is increasing pressure to secure by Congressional and administrative action special authority to develop the waters for power and irrigation and to graze livestock in the existing National Parks. Timber cutting will be the next step. This pressure is illus-

trated by the bill, already passed by the Senate and now before the House, to build certain reservoirs in the Yellowstone Park for irrigation development. The policy of the Department of the Interior has encouraged



WHITE TAIL DEER IN MINNESOTA

Thousands of deer are to be found in our public forests. Every year sees better game protection. Let the public back up our laws and help those in charge of these properties to safeguard this splendid resource from depredations of game bags and pot-hunters. This photograph was taken in the Superior National Forest.

this new viewpoint, for it has publicly endorsed the bill to promote the development of water within a portion of the Yellowstone Park.* It has further approved a

provision in the Roosevelt Park Bill to permit the acquisition of private mining claims under the general mining laws, and has given assurance regarding grazing that has led people to believe that this would be allowed on a generous scale in various of the parks.

Thus it will be seen that the distinction between a National Park and a National Forest becomes increasing-



A GROUP OF ELK IN MONTANA

It has been an uphill fight to preserve our native elk herds. Fortunately, the struggle is succeeding. This view shows a part of the Sun River herd in the Lewis and Clark National Forest. Many campers go to this region to see and to photograph the elk, and in the season there are opportunities outside the game for seekers of legitimate hunting.

*The Department later reversed its first recommendation on this measure.

ly more difficult to draw. If the idea of utilizing the National Parks for the development of economic resources continues and new parks are created with this understanding, they will soon lose their distinction and the basic purpose of the Nation in their establishment will be defeated.

The consequences of this situation will be serious both to the parks and to the forests. In the first place it would be increasingly difficult to determine what areas should be included in parks. So long as it is the policy to create parks only where there are features so unique

The effect on the National Forests would be especially serious. These areas have now been under administration for over fifteen years. They are being handled under plans that look forward many years, based upon their yield capacity for timber and forage. Many industries are dependent on these resources and are built up with the knowledge that there will be a permanent supply of raw materials. A public policy that may at any time cut several hundred thousand acres from the heart of a National Forest makes planning impossible, either by the Forest Service or by the communities and industries that



THE PEOPLES PLAYGROUND

The public should provide facilities for outdoor recreation to as many persons as possible. Many public forests are needed, federal, state and municipal, so that all may be able to enjoy their benefits. This picture shows what Los Angeles is doing for its citizens, by furnishing a municipal camp on the Angeles National Forest, which is within reach of all citizens, including those less well-to-do.

as to justify their complete withdrawal from economic use, a high standard may be maintained. Otherwise, pressure for specific parks, in many cases urged for local advertising purposes, will tend to lower the standard and ultimately to cheapen the whole system. Again, the precedent of permitting economic use in specific cases would bring such pressure upon the park administration that the dominance of recreation development would inevitably be constantly lessening as increased development of other resources takes place and would finally be lost except in name, with the result that the administration would become one of coordinate use of all resources just as in the National Forests.

are being built up on the basis of their resources. In short, the fundamental feature of permanence is at once destroyed and supplanted by uncertainty. Plans for a sustained yield under long-term working plans, with all that this means in stable industries and community development, are upset at a single stroke. If the vast plan of partition of the National Forests as advocated by many were carried out, the whole system of national forestry would be placed in serious jeopardy.

The people of the West are now accustomed to the clearly defined policies of the National Forests. Segregation of large parts of them to be handled by another organization would lead to different policies. The

breach in the progressive system of road building inaugurated by the Forest Service and of systematic plans for the scientific use of all resources would be confusing to the general public. Two federal timber policies, two grazing policies, two water resource policies, side by side, handled by two sets of officials from different Federal Departments, would create an administration that would be inefficient and costly, and it would be a situation wholly intolerable to the public.

A natural query is why the various bureaus in charge of the Federal reservations do not agree upon a common policy regarding the points discussed in the foregoing pages. Whatever the reasons, the fact remains that there is not a common policy and that legislation is repeatedly

tives of the federal bureaus have a single large objective. They ought to have no difficulty in agreeing upon the basis of a national policy. With the larger objectives and principles in mind comprehending the whole field of Government responsibilities taken together, the methods of working out a program become questions of lesser consequence, and would no longer tend to obscure the main public issues.

I have no doubt that if the President should request the formulation of such a policy by the departments concerned, it would be quickly worked out, with an agreement as to organization, methods, and procedure. With a basic policy which would become the policy of the whole Administration to be followed by all constituent



A MUNICIPAL CAMP IN THE ANGELES NATIONAL FOREST IN CALIFORNIA

The city of Los Angeles has developed two public camp grounds in the nearby National Forest. Here, for a very small cost, people can bring their families for a two week's vacation, to secure the refreshment of the high mountains and pine forests. It means health, contentment and increased efficiency to the citizens of that city.

recommended to Congress by one department that is inconsistent with that recommended by another department, with resulting confusion to Congress and the general public. This is due in part to faulty departmental organization. A deeper cause is that there has been too much attention given to forms of reservations, to names, and to procedure, and not enough thought to the large recreation problem which includes the activities of all units of organization that are directly or indirectly concerned.

There is needed first of all a broad policy that sets forth the large public objectives of national recreation, the opportunities and needs of development, the basic principles underlying the establishment and purposes of the federal reservation and the functions of each in working out the large national program.

All friends of outdoor recreation, and all representa-

members of the executive branch of the Government, order could be brought out of chaos.

OUTLINE OF A RECREATION POLICY.

More specifically and in summary a national recreation policy should comprise the following points:

1. The formulation of a comprehensive base plan for all the Federal reservations, taken together, indicating:
 - (a) The recreation opportunities.
 - (b) The needs for the development of these opportunities.
 - (c) The relation of the recreation objectives in the various reservations to each other, regardless of the class of reservation, and the relation to similar points in State, municipal, and private areas outside.
 - (d) The relation of these to the plans for road and trail building within and outside the public properties.
 - (e) The function of each class of reservation and federal organization in carrying out a progressive plan of recreation development, with all working toward a common objective and each supporting the other.
2. On public properties not closed to industrial use, the correlation of the recreation development with the



SAFEGUARD THE BEAUTY OF OUR FOREST HIGHWAYS

The preservation of the beauty of the forests along our highways is important in the public reservations; it is equally important outside. Some states are already purchasing strips of timber on private lands to prevent injury to the scenic values along the public roads. Where no forests exist, roadside trees should be planted. They are a fine investment, adding to the service of the highways to the public.



A NATIONAL FOREST ROAD

Roadbuilding is an important feature of the development of our public forests and parks for recreation. Not only do they make accessible the recreation areas, but the highways themselves are objectives for visitors. It is all-important to preserve the forests along these scenic roads. This picture shows a road in the Pike National Forest in Colorado.

use of other natural resources, such as timber, forage, minerals, water for power and irrigation and domestic supply, and with wild life conservation.

3. A clear-cut policy regarding transfers of lands within National Forests to National Parks based on the principle that this will be done only in the case of areas of a character so unique as to justify their withdrawal from all economic and industrial development, and where they are large enough to necessitate a separate administration that can not be given under the present jurisdiction of the Forest Service.

4. A policy of administration of the National Parks that excludes economic development of natural resources like timber, grazing, etc.

5. As a corollary of the foregoing, not to include in new National Parks areas of merchantable timber and other resources which by their nature and location will inevitably be needed for industrial use.

6. Joining hands of the different federal agencies in promoting recreation development outside of the public properties. The activities would include encouragement of the establishment by States, municipalities, and quasi-public organizations, of reservations suitable for recreation use, the correlation of these with the federal properties where practicable, the encouragement by demonstration and education of preserving scenic values along highways and of roadside planting, and the stimulation of activities by States and other agencies in wild life conservation. Through joint planning by the different federal agencies in this co-operative work, the part to be played by each of the bureaus would be clearly defined so that each would have its particular field of enterprise and there would be mutual support by all in the public leadership of each.

7. Encouragement of the organization outside of the federal service of a recreation council, representing the great associations of the country interested in outdoor recreation. Such a council would be able to render a public service through the education of its constituent members regarding the problems throughout the country, in bringing about harmonious and unified action in all recreation matters, by promoting sound principles of recreation development through federal, State, and municipal activities, and by its counsel to the public agencies as a spokesman of thousands of persons throughout the Nation interested in outdoor recreation.

8. The transfer of the National Park Service to the Department of Agriculture in order that its work may be more closely correlated with that of the Forest Service, the Biological Survey, the Bureau of Public Roads, and the Bureau of Plant Industry, which are the chief organizations, outside the Park Service, carrying on activities related to recreation. No single step of organization would be as effective as to bring under one departmental head all the

main work of recreation. As a separate bureau the individuality of the work of the Park Service would be preserved. Under a single Cabinet officer, all bureaus could more readily unite in joint enterprises.

Aside from a better correlation of all recreation activities, the proposed action would enable the National Park Service to have the immediate services of the Bureau of Public Roads in its highway construction, and to coordinate more effectively than at present its forest fire protection with that of adjacent National Forests.



A HIGH MOUNTAIN MEADOW IN GLACIER NATIONAL PARK

The National Parks are treasures of the nation, yielding rich returns in health and inspiration to the thousands of visitors. Let our Government contribute liberally to their support and development, and see that they are preserved as a precious heritage for all time.

PLANT MEMORIAL TREES FOR OUR HERO DEAD

INDUSTRIAL RESEARCH IN FOREST PRODUCTS

PRELIMINARY arrangements are well under way for a big get-together at Madison, Wisconsin, during the latter part of June to celebrate the tenth anniversary of the opening of the Forest Products Laboratory. It is expected that a large gathering of representatives from the various industries interested in the laboratory's work will be present, and opportunity will be afforded for recreation, as well as for becoming more familiar with the extent and significance of the laboratory's activities. The laboratory is a branch of the United States Forest Service, established in 1910, in co-operation with the University of Wisconsin, and is a consolidation of a number of testing laboratories and other units of the Forest Service, which had been located at various points throughout the United States. It is engaged principally in industrial research on problems connected with the manufacture and use of forest

authority and with information gathered from observations of the work of the laboratory on the ground of operations. So strongly do I feel that this laboratory should be encouraged in its splendid work under the excellent supervision of its director, Mr. C. P. Winslow, ably supported by the assistant director, Mr. O. M. Butler, and the efficient members of the staff—who are men of high caliber and large scientific attainments—that were it not for the very strained condition of our National Treasury and the general slogan for retrenchment of expenditures I would, at the proper time, move an amendment to double the appropriation called for in the bill. Indeed, I sincerely hope that we shall agree that it will be a matter of economy and conservation of our commercial, financial, and economical resources as a Nation to increase this appropriation in next year's budget to at least \$500,000, so as to give adequate sup-



MAIN BUILDING OF THE FOREST PRODUCTS LABORATORY

The laboratory occupies, in addition to this building which is the property of the University of Wisconsin, one other building smaller than this one, and parts of two other University buildings. It occupies also several other buildings of more or less temporary construction, such as the pulp digester house, the box laboratory, the sawmill, and the various storage sheds.

products, including besides lumber, posts, poles, ties and similar products, pulp and paper, naval stores, hardwood and softwood distillation products, and other chemicals and pharmaceuticals. At the present time, the laboratory employs about 200 people, and occupies five buildings in whole or in part.

An excellent presentation of the work done at the laboratory was made recently by Hon. A. P. Nelson, of Wisconsin, in an address in Congress in support of the appropriation desired for the laboratory. He said:

"I happen to be quite familiar with the work of the Forest Products Laboratory located at Madison, Wisconsin, having been 13 years a member of the board of regents of the University of Wisconsin, and a member of the board when this laboratory was located at Madison in 1910. I can, therefore, speak with some degree of

port to one of the most important scientific bureaus of investigations and tests carried on by our Government in the conservation of our natural resources.

"The present lumber and wood prices are the highest that have ever been known in the United States, and are still rising. In spite of rapidly increasing prices, which are partly due to the growing shortage of materials, there is an appalling waste and loss of efficiency in handling, through practically every phase of wood manufacture and utilization, from the logging operations in the woods to the completion, shipment, and even in the use of the final product. Losses in the seasoning of wood in the United States at the present time are conservatively estimated to reach nearly \$50,000,000 annually. Every dollar of this loss is an added cost in the production of lumber and every board foot wasted

an additional drain on our rapidly diminishing forest resources. Several billion feet, worth in the neighborhood of \$75,000,000, could be saved annually if full use were made of preservative processes for treating ties, poles, posts, piling, mine timbers, shingles, lumber, and other wood which is exposed to the weather and thereby subject to decay. A large percentage of the annual loss from fire in the United States of about \$200,000,000 is in wooden structures, and this could be materially reduced through the development of fire-retarding paints and compounds and fire-resisting construction. A casual survey shows that the losses from faulty mill and shop practices in a wide range of industries amount to millions of dollars annually. Unnecessary losses through packing and shipment in poorly designed and constructed containers are variously estimated at from \$40,000,000 to \$100,000,000 annually for domestic shipments alone, and the packing methods used by American concerns in export shipments are reported by the Consular Service to be notoriously bad.

"Practically every city in the United States has its own building code, and for wood as a material there is the greatest confusion and practically unlimited range in requirements. Reasonable uniformity would be of obvious advantage to both manufacturer and consumer. In structural timbers, strength is ordinarily a prime requisite, yet for only two groups of timbers in the United States has a system of grading rules been developed which selects the wood on a basis of its strength.

For lumber, practically every species has at least one distinct set of grading rules and several species have more than one set, and this from the standpoint of the consumer results in a confusion which places the average consumer at a great disadvantage in his lumber purchases.

"Of the material in the woods, only approximately 30 per cent appears in the form of seasoned rough lumber, and in the manufacture of the rough lumber there is a further waste which in some important wood-consuming industries reaches from 10 to 25 per cent, and in special cases even higher. In the bending of high-grade stock in vehicle making, for example, losses frequently reach 50 per cent. We are clearly falling far short of taking advantage of our opportunities for saving and utilizing this enormous waste.

"Many of the industries which manufacture and utilize wood are among the oldest industries, and as such have been very slow on their own initiative to improve their processes and cut down waste. The public is concerned as much as the industries, because inefficient methods and waste are exhausting our remaining timber resources and are increasing prices of all wood products to the consumer. The only effective solution of this situation lies in forest products research, provided for in the Forest Products Laboratory.

"It was for this purpose of promoting economy and efficiency in the utilization of wood and in the processes by which forest materials are converted into commercial



THE LOG YARD OF THE FOREST PRODUCTS LABORATORY

Practically all of the wood received at the laboratory for experimental purposes arrives in log form. The logs are stored in the yard until needed, and are then cut up in a special electrically-driven sawmill into the proper sizes for testing. This log yard has probably had stored in it from time to time more species of wood than any other log yard in the world.



MANUFACTURE OF AIRCRAFT PROPELLERS

The experimental manufacture of aircraft propellers at the Forest Products Laboratory, Madison, Wisconsin, and subsequent storage under controlled humidity and temperature conditions, gives an excellent opportunity for a study of stresses of laminated construction as influenced by manufacturing methods and climate.

products that the Forest Products Laboratory was established in 1910 by the United States Forest Service at Madison, Wisconsin, in co-operation with the University of Wisconsin. This laboratory is an institution of practical research and, with the exception of a similar, though much smaller organization in Canada, is the only institution of its kind in the world. Its organization of trained specialists conducts investigations into the mechanical, physical, and chemical properties of various woods and wood wastes and of processes and methods of manufacture and handling to secure greater efficiency and economy. When it is considered that the value of the products of the primary and secondary wood-using industries of the country aggregates over \$10,000,000,-000 annually, the importance of such an institution is apparent. Indeed, the hearings state that the lumber industry is the second or third largest industry of our country.

"In the early years of its operation, the laboratory's small organization of eighty-odd people devoted its attention primarily to the development of fundamental and correlated information of the properties of the varied available species of timber and to improvements in the more well-known and standard processes and methods in its utilization.

"At the outbreak of the World War, the importance of forest products to a successful national defense program—from the airplane propeller to the charcoal in the gas mask, and from the wood alcohol in the high explo-

sives to the wooden container for the shipment of the shell—made necessary not only the use and application of the knowledge already gained, but a vast amount of further information which necessitated increasing the prewar organization. Since the close of hostilities, it has been found that the results of this work during the emergency are practically all applicable to industrial needs, and while lack of funds has made it necessary to reduce the organization over 50 per cent, the industrial requests for the wider effective dissemination and demonstration of the results already secured and also for further studies and investigations are sufficient to justify an organization far greater than is at present possible. These requests and opportunities are becoming increasingly broad and numerous, and failure to meet them is causing incalculable losses annually to the country. For example, one of the conspicuous lines of work which should be greatly expanded is the investigations to develop the general laws for box and container construction, the relationship between the size and contents of the box, the kind and thickness of material to be used, methods of nailing, strapping, and so forth, and further, special tests to check the application of general laws to special classes of containers. Tests of this character with proper co-operation with producers and shippers will rapidly reduce unnecessary losses, now amounting to millions of dollars annually. As one example of the value of forests products investigations, work of this character is known to have saved to the United States

several times more than the total sum spent to date in all forest products investigations.

"A system of grading for structural timber which permits its selection on the basis of strength, the prime requisite, has been developed and commercially adopted only for the southern pines and the Douglas fir of the West. Similar rules should be developed for hemlock and for other woods used for purposes where strength is a controlling factor. The growing scarcity of timber and the difficulty of securing high-grade materials in large sizes will result in the use of built-up timbers. Two years of war alone brought pronounced changes in this direction. If built-up timbers are to be used safely and economically, an extensive series of tests to develop the best designs and the most effective fastenings and joints is necessary.

"In addition to structural timbers, there are great possibilities in the use of laminated and built-up con-

My dear Mr. Nelson:

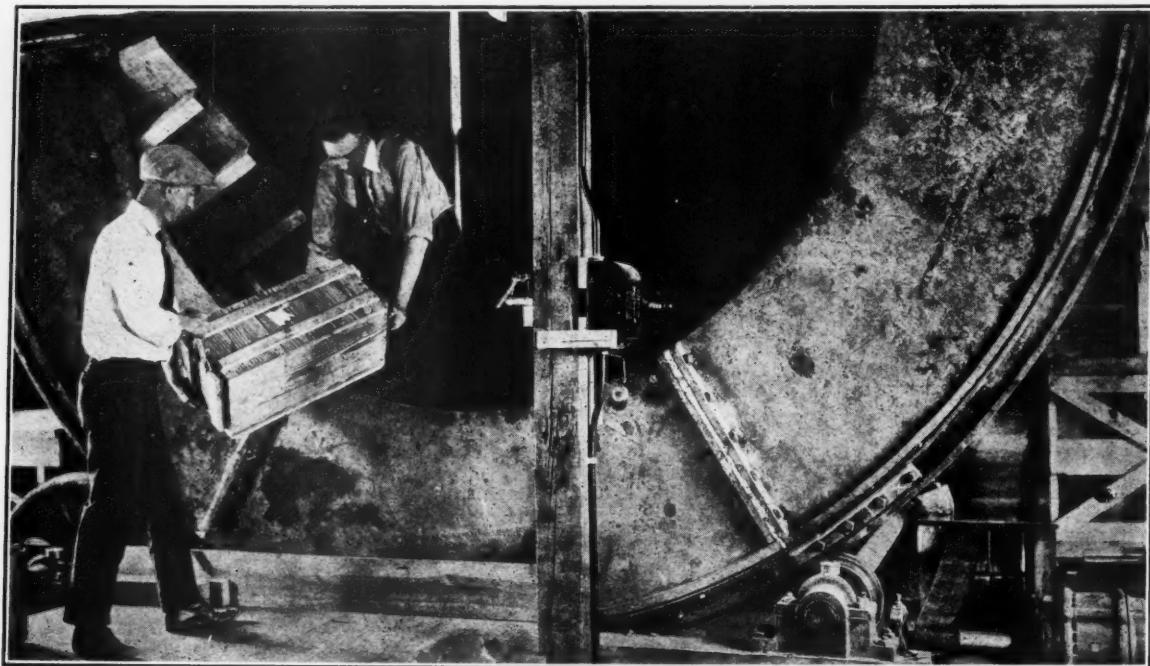
Your speech in the House of Representatives on February 10, regarding the work of the Forest Products Laboratory of the Forest Service, at Madison, Wisconsin, has just come to my attention and I have noted it with a great deal of interest. May I not express my appreciation of the way in which you handled the matter. Your remarks will do much to make known the character and importance of the investigations conducted by the Laboratory and to bring about a wider recognition of their value.

Sincerely yours,

E. T. MEREDITH,
Secretary.

struction for many other purposes, such as wagon parts and smaller articles, like shoe lasts, and so forth. Any such development increases utilization, reduces the cost of material, and the losses and time in drying. Fundamental strength tests should be completed for all American species, since only from these tests can be decided the comparative merits of various timbers, which are becoming scarce or high priced, and the possibility of using substitute timbers.

"Plywood is a comparatively new wood product, and compared to other materials of construction, little is known of its strength, of the comparative values of different species, the best methods of manufacture, the best glues and methods of gluing and of its merits as compared with solid wood. Its use is increasing, and information along the lines indicated is greatly needed. The development of glues is necessary from the standpoint of plywood and also from the standpoint of many classes



LOWER HALF OF LARGE BOX TESTING DRUM

This drum, at the Forest Products Laboratory, Madison, Wisconsin, which is so large that it occupies two full stories in height, is mounted on trunnions and is motor-driven. The boxes are placed inside of the drum and fall from one face to another, as the drum rotates. By means of suitable obstructions and guides, the boxes are made to fall in different ways, thus producing the shocks similar to those they might be expected to receive in service.

of laminated construction, and for those which are exposed to the weather and to moisture, water-resistant glues are necessary. Before the war there were no recognized standard specifications for glue. An excellent beginning was made in investigations of glues and their proper manipulation during the war, and the results of the work with waterproof glues and plywood at the Forest Products Laboratory saved the country over \$5,000,000 in the procurement of this material during the emergency; but the bulk of the field still remains to be covered.

"For many purposes, such as furniture, vehicles, coverage, and airplane manufacture, it is necessary to bend wood. Practically nothing is known as yet of the conditions under which this can be done most effectively."

the application of results to the remainder of American species in commercial use, especially to such important species as Douglas fir, western hemlock, and some of the more refractory hardwoods. While the more important field is in methods of artificial drying, there is room also for a great improvement in methods used in the natural seasoning of wood.

"The life of the four to six billion feet of timber which decays in service each year could be lengthened from two to four times by preservative treatment. The work already begun to determine the efficiency of various preservatives under various conditions of exposure and when used with different species should therefore be hastened and completed.

"Preservatives not only prolong the life of treated



A GLUE SPREADER

This machine is used at the Forest Products Laboratory in connection with investigations into glues, plywood and laminated construction. The illustration shows a veneer core being coated in both sides with water-resistant casein glue. Several glues of this type have been developed at the Laboratory.

and without the excessive losses at present common in commercial plants which waste high-grade, expensive materials.

"On problems connected with the drying of wood, much progress has been made in the development of general laws and in their application to a few of our more common woods and a few additional woods which can not be seasoned easily. The work done has made it possible, for example, to kiln-dry wood with safety for airplane construction during the war. Much remains to be done in the determination of general laws and in

woods, but make it possible to utilize the less durable species in the place of the more durable ones. Untreated piling of the best species when placed in exposed conditions is sometimes wholly destroyed in a few months. Work so far done indicates for this specific use the possibility of increasing the life to several years. Far too little has been done in the development of fire-retarding compounds for the impregnation of wood, and the possibilities are practically unlimited. Enough has been done in the study of methods of construction to show great possibilities in the reduction of fire risks by the develop-

ment of slow-burning construction and of fire stops. During the war, a cheap and practical wood coating was developed for airplane propellers which practically prevents the absorption of moisture and thus eliminates the shrinking, expansion, and warping which make airplane propellers useless. Investigations of this character should be extended to wood finishes and protective coatings in general, with the practical certainty of great benefits in durability and resistance to the absorption of moisture. There is a very general and urgent demand for the development of satisfactory coatings and finishes.

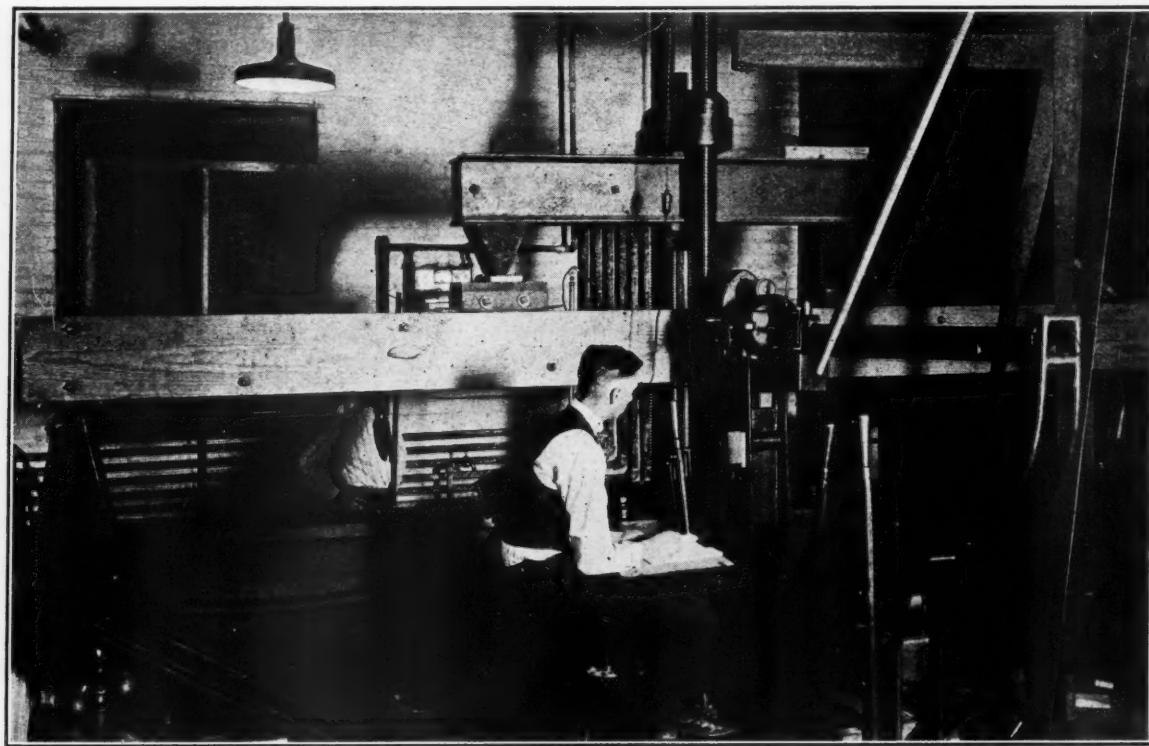
"Intensive technical studies of the operations of mill and shop practices of lumber, pulp and paper, and the secondary wood-using industries such as veneer and cooperage plants, furniture factories, sash and door mills, vehicle and implement factories, and various kinds of specialty shops by highly-trained technical men able to review the processes and problems of these industries in an entirely new light, can unquestionably bring about savings and increase efficiency amounting to many millions of dollars annually.

"The greatest possibility for utilizing the two-thirds or more of the material in the woods which is now wasted before the final product appears is through the chemical industries. Of these, the pulp and paper industry is the most important. Tests already begun to determine the feasibility of using other American species

pulp should be completed for all promising species. Further studies are needed to improve the efficiency of paper-making processes. The demand for specialty products made of pulp is rapidly increasing, and much work should be done on such products as fiber silk, twines, rugs, fabrics, and so forth. Losses through the decay of wood pulp in storage now amount to several millions of dollars annually, and the development of methods to eliminate this will benefit the supply, quality, and cost of print paper. Methods employed for the distillation of both hardwoods and softwoods are still primitive.

"Comparatively few species are used, whereas there is a possibility of using many, and the use of waste material can be greatly increased. Much should also be done regarding the possibilities of utilizing the products of wood distillation.

"Wood pulp made from spruce is now practically the basis for most of our news-print paper, and while the demand for news-print paper is increasing at an enormous rate the supply of spruce logs is decreasing at an alarming rate. Already the shortage is acute, and we are facing a paper shortage that threatens the suspension of many of our newspapers of the country. In the hearings on this bill we are told that 2,000 to 3,000 small newspapers face extinction unless the news-print supply is increased. No doubt, other woods can supply the



TESTING MECHANICAL PROPERTIES OF LARGE BEAMS

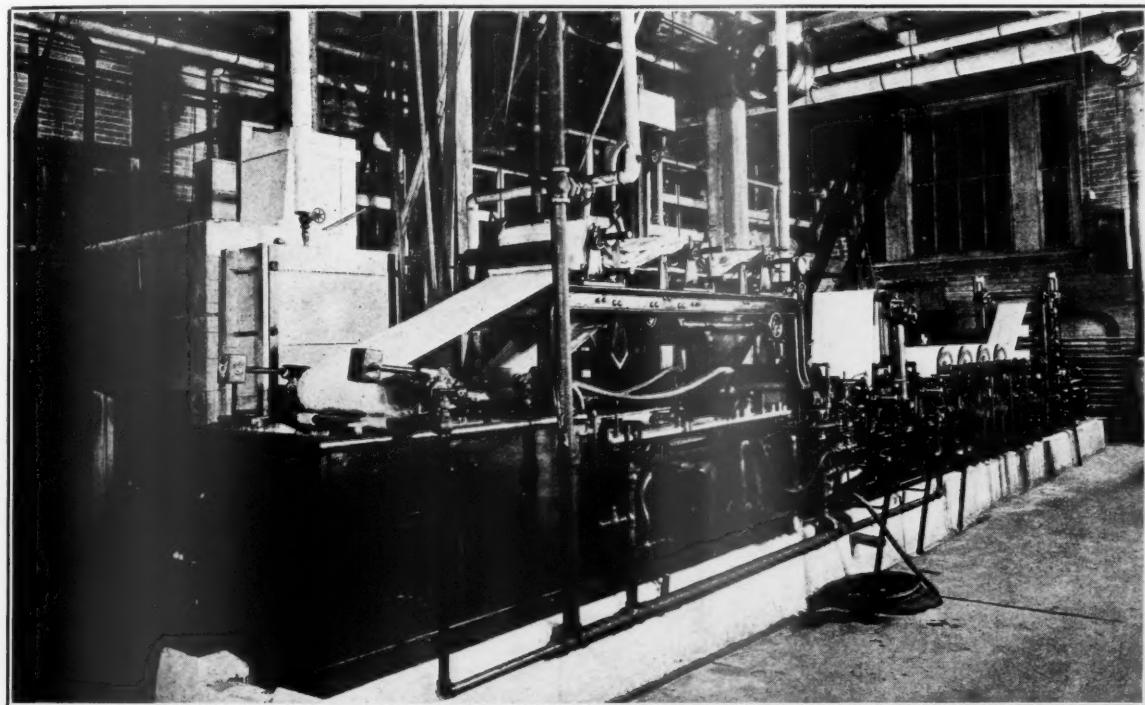
The specimen undergoing test is a laminated floor beam. While the use of laminated construction for members of this character is not new, it has recently received a decided impetus and experiments are under way to determine the exact value of the present types of laminated construction and to develop improved types. In testing these beams the load is applied through the two pads resting on top of the beam, each pad being one-third of the distance from the center of the beam to the outer supports. Pressure is applied to the pads by means of the metal beam, resting on them, and the two vertical screws opposite its center. The actual load is measured by the weighing beam shown in the right foreground.

need. We should find by tests what they are. The Forest Products Laboratory, provided with adequate funds to carry on tests and experiments, would, undoubtedly, find some relief for the acute situation which now exists. Indeed, could Congress be made to realize and understand the importance of the pulp and paper division of the Madison Laboratory alone, it would gladly and promptly provide an adequate appropriation for its support.

"An important phase of forest-products research is co-operation with industries and the public, to assist as fully as possible in putting promising laboratory results

valued at over \$10,000,000,000. The application of the results of the laboratory's investigations have already resulted in direct savings to this country amounting to many times more than the total cost of maintaining the institution during the past 10 years.

"There is an ever increasing demand upon the laboratory organization for further work, and this has never been more acute and important than now, when the constantly rising cost of lumber and other wooden products is making economy in the utilization of forest products of increasing importance not only to the industries concerned, but to the public as a whole. It would seem,



PAPER MAKING MACHINE

This machine is used for determining the paper making qualities of native woods. Such information is urgently needed at present, on account of the rapidly diminishing supply of the woods commonly used for the manufacture of paper pulp.

into practice, and this phase of the work should be developed in proportion to the investigations. It is as important to see that the results of the work are effectively utilized as it is to conduct the research; this can only be accomplished by the development of a group of specialists able to lend assistance of a practical nature at the plant or place of operation of the manufacturer engaged in the use of wood or its by-products.

"In general, the Forest Products Laboratory is practically the only institution of appreciable size in existence which is devoting its attention solely to wood and its by-products. Its work bears directly on the problems of industries manufacturing annually products

therefore, a short-sighted policy to restrict the activities of this institution, and that in any sound policy of economy adequate provision for the continuation and expansion of the work of this institution should be made.

"Economy and efficiency in handling forest products, and a comprehensive plan for reforestation of our denuded wasteland areas, is a national necessity. One of the greatest and most important national problems today is the proper conservation and utilization of the products of our rapidly depleting forests. A national forest policy is one of the pressing needs in our reconstruction program."



STATE FOREST FIRE PROTECTION

BY E. C. HIRST, STATE FORESTER OF NEW HAMPSHIRE

THE growing interest in forestry has, during the past decade, found its greatest expression in the establishment of forestry departments by the States. There are now in thirty-two states organized departments carrying on forestry work. A few of these have only made a beginning by establishing an office in charge of one man, but at least twenty may be said to have well developed departments with highly specialized branches. In general, the work carried on by State forestry organizations provides for forest fire protection; reforestation of waste and cut-over land; acquisition and management of State forests, and for educational work among woodland owners.

The work of fire protection is, and will be for many years, the most important duty of State forestry departments. While a very few states have considerable areas of State forest land to protect, the largest work is the protection of privately owned forests. In this respect the work of the States must differ in methods and policy from the protection work of the Forest Service on the National Forests.

Since 1911, the fire protective feature of the Weeks Act has been a great spur to the States in the development of fire organizations, and in securing the legal and financial backing therefor. The present typical State forest fire organization comprises a commission or board, either named or appointed, acting in an advisory capacity in shaping the general policy; a State Forester, or Forest Commissioner, appointed by the above board and having direct administrative authority; a State forest fire warden appointed by the State Forester and having special charge of the fire organization; district chiefs having charge of all fire wardens, lookout watchmen, patrolmen, and of the enforcement of the fire laws in their respective districts, and the fire force composed of local wardens and deputies, lookout watchmen, patrolmen, employees of railroads and other co-operating companies and State departments.

A forest fire organization substantially as outlined is now an accomplished fact in about twenty states, and the nucleus of such an organization has already been started in twelve other states. With the encouragement offered to the states by the fire co-operative features of the Weeks Act, it seems safe to predict that within the next decade, practically all of the important timber states will be thus equipped.

The question then that should interest foresters and woodland owners is this: granting that all the states, or any group of states embracing one forest region, are equipped with an effective forest fire organization, can we look forward to a time when forest fires will be one of the minor considerations in our work and when more of our efforts can be given to silviculture and forest management?

For an answer we must go back to the fundamental

question of the causes of forest fires and the possibility of the removal of these causes. Broadly speaking, there are two classes of direct causes and one contributing cause. The direct causes of forest fires are: first, mechanical or preventable causes; second, human or reducible causes. The mechanical causes are railroad locomotives, portable steam mills, and other mechanical equipment operated in forest regions. The human causes are due mainly to carelessness, and in a few instances to malice. Most of the fires due to carelessness are started by smokers throwing down lighted matches, cigars, or cigarettes; by burning brush in dry windy weather and without sufficient help; and by hunters, fishermen and campers. The only direct cause falling outside of these two classes is lightning. Besides the direct causes there is the great contributing cause of inflammable slash and debris left after lumbering operations. For a satisfactory answer to our question, we must find a practical way to remove or reduce all these causes.

The greatest mechanical cause of forest fires is the operation of railroad locomotives through woodland regions. Fires caused by portable steam mills and other engines are negligible as compared to the total.

The best results have been obtained where the enforcement of railroad fire laws is vested in the State Forestry Departments. In 1915, a monograph prepared by Mr. Philip T. Coolidge covered very thoroughly the uniformity of forest fire legislation affecting railroads in the eastern and northern states. In the typical effective state law, the railroads are held liable for fire damage and the cost of extinguishing fires which they originate. They are required to use spark arresters and ash pans, subject to the approval of a Public Service Commission or similar State board, and are required to instruct their employees in the notification and fighting of fires. In the more advanced states, the railroads are given the right to clear inflammable material on woodland adjacent to the right of way at their own expense. One of the first steps to be taken in the further reduction of railroad fire damage should be to iron out the irregularities in the requirements of different states as to railroad fire protection. To do this, forest and railroad officials in each forest region should collaborate, probably through some central medium, and this seems to me best furnished by the Forest Service officials in charge of the administration of the Weeks Act. Through such collaboration; through the improvement of railroad fire fighting, and through prevention by patrols, fire lines, improved spark arresters, and the extension of all these precautions to all forest regions, railroad fire damage may be reduced to such a minimum that locomotives may be justifiably classed as a preventable cause.

The human causes of forest fires are carelessness and malice or incendiarism. The latter cause is much

less frequent, but both are discouraging to combat, because in only a few instances can the real cause of a careless or malicious fire be definitely proved, and in probably half the cases, it is only suspected and not actually known. It is on account of the human factor that these fires are not and will never be absolutely preventable. They will be, however, reducible to a considerable extent, and the two means to such an end are education and the enforcement of law. In many of our states the enforcement of the fire laws is probably the weakest branch of the Forestry Department's activities. A few of the more advanced states are making remarkable progress in this matter. Education in fire protection has been conducted with various degrees of success in different states and forest regions by Forestry Departments and timberland associations. In the northwest, the publicity work of fire protection has been developed to a high degree of efficiency. There is still considerable work to be done in the studying of the different classes of offenders and the preparation of special educational work for each class. As educational work progresses, public sentiment will make it easier to enforce the law. It is in the matter of specialized education and publicity work on forest fires, adapted to each region, that the Forest Service, through the Weeks Act can render highly valuable service to the states.

There still remains the great contributing cause; namely, inflammable slash left after lumbering operations. So long as there is any considerable fire danger from mechanical and human causes, lumbering slash will constitute a menace to growing timber in its immediate environs; and conversely, if the slash problem is solved, the danger involved in the direct causes of fires will be greatly reduced. Certain it is that real forestry cannot be generally practiced in any forest region where coniferous stands prevail until provision is made for slash disposal. This is a problem which we cannot avoid. It is the next great step in the development of fire protection and the foresters must face it and solve it. It is quite impractical to recommend to any owner the expenditure of money in planting, thinning, or improvement cuttings when there is immediately adjacent to his holdings a dry slashing ready for the match, or even if there is likely to be.

The question of general slash disposal is a regional question and should be studied as such. Where enacted such laws constitute the farthest step in police powers that forest officials have yet been trusted with, and such legislation should be passed only after careful

judgment and the consideration of eventualities. Such a law, if enacted, without careful study of economic conditions, and if enforced inadvisably might easily prove the pry for overturning a whole State Forestry Department.

The question should also be studied carefully for each region in order to determine the silviculture and fire protection necessities of the different forest types within the region, the methods of disposal that will contribute best to these ends, and the legal requirements for putting these into effect. It is easily conceivable that in one state the lumbering operations in two or more timber regions may require slash disposal by entirely different methods. Thus, in the operation of certain northern hardwood types, it may be found sufficient and altogether desirable to simply lop the large limbs and allow the remaining material to decay on the ground; with the white pine, it may be found better to pile and burn all brush during the lumbering operations; in the spruce region, it may be more advisable to lop the limbs from the tops and scatter them flat on the ground, and all of these conditions may prevail in one state.

We have seen by the foregoing that a number of states are now equipped with efficient forest fire organizations and ready to assume more authority and take on more activities in this field than they are now doing; and that such organizations are being started in other timber states. We have observed the great direct causes of forest fires to be railroads, and carelessness and maliciousness of individuals; that railroad fires promise to be preventable or reducible to a low minimum; that fires caused by carelessness and maliciousness are possible of considerable reduction, but that they will always constitute a serious menace; and that lumbering slash will always constitute a contributing fire danger.

It would appear that our best efforts should be directed toward the perfection of railroad fire prevention, the enforcement of law, and the systematic education of the public on fire protection, and that we should devote special attention within the near future to the matter of general slash disposal. The means to this end lie with the American Forestry Association, in its ability to study and present to the public the methods and costs of slash disposal in each timber region, and thereby to prepare the public mind for legislative enactments; and with the Forest Service through the officials in charge of the Weeks Act by collaboration with the forest officials of the several states.

THE ARECA PALM

LINNAEUS has called the palm family the princes of the Vegetable Kingdom, and the Areca Palm (*Areca Catechu*), because of its straight, tall and graceful beauty, as well as for its economic importance should not fail of mention. Owing to its slender straightness, with a feathery tuft of fronds at its summit, it has been likened to "an arrow from heaven" by the Hindu poets, and one never sees a crooked growth in the membership of the Areca family. Its chief use is in its fruit, a small nut, not unlike a nut-meg, which has an annual export from Ceylon alone of 8,000 tons. The use of these nuts is in a combination with the leaf of a vine called Betel, and a pinch of lime. This is chewed as Europeans are accustomed to chew tobacco. The quid is made up of a thin slice of the nut and a

bit of lime in the form of soft paste, rolled up in a betel leaf. It is called a masticatory; the expectoration from this quid or masticatory has the redness of blood; its use is universal in the east. When Bayard Taylor first entered India he was shocked by the impression that the entire population had hemorrhage; herein, then, is the commercial demand, chiefly from India, for 8,000 tons of the fruit of the Areca-nut palm. The users of this masticatory claim that it possesses sustaining qualities, that it reduces both thirst and hunger. Whether that be true or imaginary, it is surely, like tobacco-chewing, a filthy habit and one which we will certainly not charge against the beautiful Areca Palm.

THE VALUE OF THE IBIS

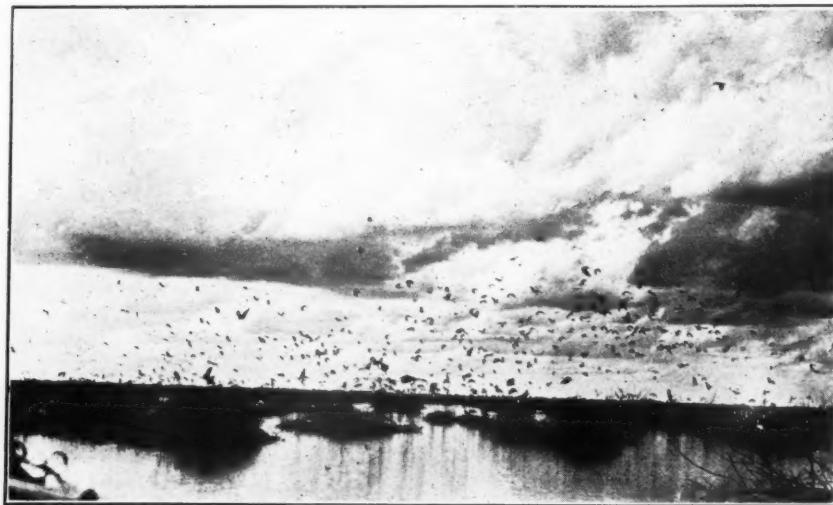
BY W. H. D. LESOEUF,

DIRECTOR, MELBOURNE ZOOLOGICAL GARDENS

IT is interesting to know that the ibis are found over the world and there are no more valuable birds than they. This was fully recognized by the ancient Egyptians, and there they looked upon them as sacred and mummified their bodies three thousand years ago and over. A closely allied bird is found in Australia, in

bushes, the water was about three feet deep. We considered that there were about 200,000 ibis nesting there. In the centre of the swamp young birds were nearly able to fly, and fresh eggs were found on the outskirts, the whole host of birds was made up of varying sized companies, say from twenty pairs to one pair, and they

arrived at different times. We shot a few of the birds and counted and weighed the contents of their stomachs. Their food consisted largely of young grasshoppers, with a few grubs, centipedes and fresh-water snails which latter are the host of liver fluke. We reckoned that the whole company of birds took every day the large total of about 482 millions of grasshoppers, as well as various other insects, and also that the total weight of the contents of their crops came to 25 tons. These figures are difficult to realize and therefore we can easily guess why the Egyptians valued these birds so highly. It is quite possible that the grasshoppers were more abundant



STRAW-NECKED IBIS NESTING. THEY CONGREGATE IN IMMENSE ROOKERIES IN SWAMP LAND TO LAST OUT THE NESTING SEASON

conjunction with another variety, the straw-necked ibis, as well as a few of the glossy ibis. The two former birds exist in great numbers over the island continent and their value to agriculturists cannot well be overestimated.

They congregate in immense rookeries in suitable localities during the nesting season, when the wet season has been good and the swamps have sufficient water to last out the nesting period, as many of them dry up by the end of the summer. Not long ago the birds misjudged the amount of water and the swamp dried up before the nesting was completed. The adult birds then left in a body and the crows and similar birds had a high time living on the deserted ibis eggs, but such a catastrophe does not often happen.

Not long ago, I visited Riverina, in New South Wales, with Major-General Sir Charles S. Ryan. We found the ibis nesting in a swamp of about 500 acres and covered with lignum

ant than usual at the time of our visit, but that would not alter the fact as to the value of the ibis. The locust plague in Egypt is far more severe than we have in Australia.

The Egyptians also made their hawks, especially the Kestrel, sacred and mummified them as well, and we



NESTS OF STRAW-NECKED IBIS AT "WIDGIEWA," RIVERNIA, NEW SOUTH WALES

know that the Kestrel especially and also many other of the slower flying hawks feed largely on insect life. The grasshoppers have other enemies in Australia, fortunately, as when they lay their elongated eggs in the

ground in small bunches, cockatoos often find them out, and digging up the ground with their strong beaks, devour many thousands of them, yet, I am afraid these birds often do not get the credit they deserve.

THE BATTLE AGAINST FOREST INSECTS

IMPORTANT results have been obtained in investigations of insects affecting forest resources, according to the recent annual report of the chief of the Bureau of Entomology, U. S. Department of Agriculture. An extract from the report follows:

"An especial investigation of the insect damage to crude spruce products for airplane stock in the States of Washington and Oregon showed that the greater part if not all of the damage could be prevented by proper methods of logging and production with little or no additional cost.

"Exhaustive studies of insect investigation and control were continued in the Sequoia and Yosemite National Parks. Much new information has been gained, and the methods of gathering and compiling field data have been standardized.

"A special study was completed on the interrelation of forest fires and insects on an area of about 8,000 acres in southern Oregon. This area had been under observation since 1914, and the fire had burned over about 800 acres in 1918. The records show that previous to the fire the insects had killed 485,000 board feet of timber. The fire killed 170,000 feet, and subsequently the slightly fire-injured as well as the uninjured trees in the burned area were killed by beetles, which were attracted from the surrounding areas. It was noticed that the infestation in the burned area increased more than 1,000 per cent, but it was found that the infestation in the surrounding areas decreased. It was also found that the broods of the beetles in the fire-scorched trees failed to develop to much beyond the original number that attacked the trees. So the fire did not contribute to an increase of the beetles in the general area or to the starting or extension of an epidemic of beetles. This result is of extreme interest and hardly to be expected.

"The most careful study ever made of the history of an epidemic infestation by tree-killing beetles was completed and a report submitted during the year. In the Rogue River area in about 48,000 acres, near Ashland, Oregon, the western pine beetle in 1914 caused the death of 346,000 board feet of pine timber. In 1915, 1,615,000 board feet were killed; 1,383,000 feet in 1916, and 608,000 in 1917. A count of the young and matured stages of the beetles that developed in an average foot of bark, and also of the number of exit holes through which the beetles emerged to attack other trees, showed that there was a notable decrease in numbers during the development of the broods each year in the infested trees on account of the increase of natural enemies and other disturbing factors. This helps explain why these beetle epidemics rise and fall within a limited period of years, and it explains how the western forests of yellow pine are naturally protected from total destruction. These facts

are especially significant in connection with the application of the percentage principle of control, as by aiding the natural forces which work against the abnormal increase and spread of the beetles complete control may be gained. The history of this epidemic shows the importance of prompt recognition and prompt treatment of a threatened outbreak in order to prevent the great loss of timber which would occur before natural control became operative.

"Another special study was made of the number of all stages of the western pine beetle in 330 square feet of infested bark selected from 67 trees, which represented an average infestation within an area of approximately 36 square miles. It was shown that there is a large percentage of mortality between the young and matured stages in the developing broods, but that normally an average of about 150 beetles to the square foot of bark developed to that adult, or reproductive, stage; which would be 50,000 beetles to the average infested tree, or, say 39,000 beetles to 1,000 board feet of timber. Since it requires an average of about 10 beetles to the square foot to attack and kill a vigorous, healthy tree, it will be seen that all the pine timber of the western forests would soon be destroyed were it not for natural and artificial control.

"Experiments to determine the time of year to cut and the methods of handling mesquite for fuel, posts, etc., to avoid destruction by wood-boring insects, have been nearly completed, and the results show that serious loss in the Southwest can be prevented by cutting the trees in the late fall and early winter and piling the wood in loose piles until it is thoroughly dry. Damage to posts can be prevented by cutting them at any time and laying them on the ground where they will receive the full force of the sun, turning them occasionally so that the young stages of the borers will be killed by the heat.

"Studies of damage to lead telephone cables in California by a wood-boring beetle have been continued, and the results so far show that the beetle is able to penetrate alloyed substances that are considerably harder than lead. The problem is still unsolved, and it will be difficult to find a practical means of controlling this pest, which is able to put hundreds of telephones out of commission by boring holes in the cables, through which the water enters, rendering the wire connections useless until the place is found and repaired.

"Continued experiments with chemical substances applied to finished and crude forest products show that very few of the many substances that have been tried are effective, and, with crude products, none of them is so economical as simple and inexpensive management in logging and manufacture which will render the conditions of the bark and the wood unfavorable to attack.

"HALL OF FAME" FOR TREES

THE DESOTO OAK

The DeSoto Oak in the Tampa Bay Hotel Grounds, nominated for a place in the Hall of Fame by J. E. Worthington, managing editor of the Tampa "Times," has much upon which to base its claims for recognition. During the War with Spain General Nelson A. Miles made his headquarters for a time under this tree, but the history of the tree goes back much farther than that, according to Mr. Worthington. Here is what he says:

In the Tampa Bay Park is a large spreading oak tree which, so legend says, was the resting place of DeSoto on his first trip to Florida.

The tree is situated about 100 feet from the main entrance and has a spread of 120 feet with a height of approximately 80 feet. It is one of the handsomest and best proportioned trees in the city.

In the old Indian legends of the landing of the Spaniard reference is made to meeting places under the great trees and it may well be that this tree was one of them. At least legend makes the claim for the old tree and has for many years.

In 1526, an associate of Cortez, at that time ruler of Mexico, Pamphilo DeNarvaez, was made governor of Florida. This daring fortune hunter, in company with 200 followers, sailed from Cuba and finally landed in Tampa Bay. The expedition proved disastrous as the hostile Indians set upon them and soon they were nearly annihilated.

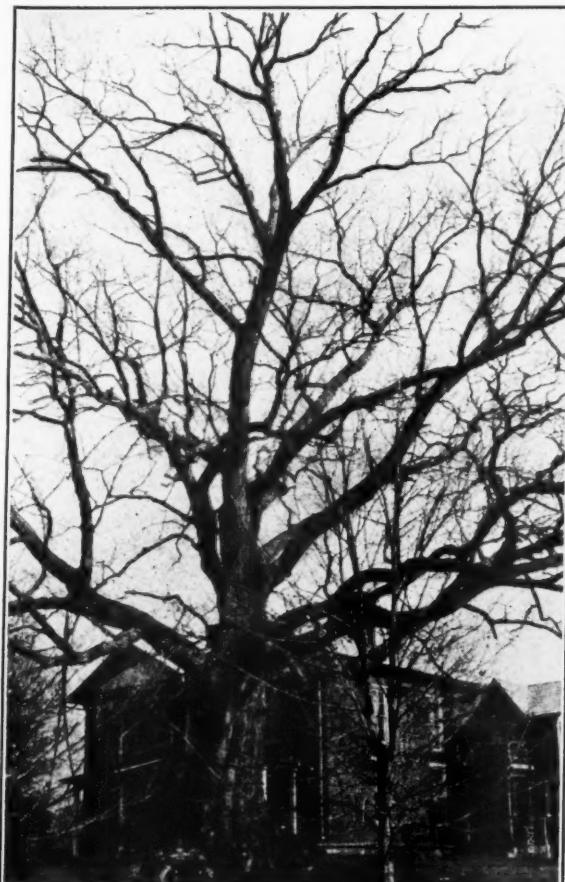
In 1539 Ferdinand DeSoto was appointed governor of the provinces of Florida and Cuba, and with about 1,000 of Spain's most wealthy and adventurous young men set out for the conquest of the New World.

DeSoto, who just prior to his appointment, had returned from a successful expedition to Peru was filled with ardor and desires for new fields of adventure. He landed on shores of Espiritu Santo (Holy Springs) Bay.

There are said to have been conferences with the Indians under this tree before they and the cavaliers fell out and DeSoto began that march which, after three years' time,

landed him on the banks of the Mississippi, in whose waters he was finally laid to rest.

Soldiers of five wars have been drilled beneath this tree, nominated for a place in the Hall of Fame by Mrs. H. F. Lewis, secretary of Virginia for the Daughters of the American Revolution. It is known as the John Pemberton Oak. Under this tree Colonel John Pemberton mustered his troops for the Battle of King's Mountain in 1781. A marker has been placed on the tree by the Sycamore Shoals Chapter. The soldiers of the War of



THE JOHN PEMBERTON OAK

"HALL OF FAME" FOR TREES

1812 met here. Then came the Mexican War and the old tree saw men again leave their homes to fight. Next came the struggle between the States, and the oak witnessed the drilling of men to fight one another in their own country. Then came the World War and again the veteran oak saw our boys answer their united country's call.

The Lafayette Elm at Kennebunk, Maine, is widely known throughout New England. It was under this tree that General Lafayette lunched when he visited Kennebunk while touring the United States. The tree is nominated for a place in the Hall of Fame by Miss Ellen Darrach, of West Philadelphia.



THE LAFAYETTE ELM

Here is a tree that literally jumps into the Hall of Fame for Trees, for according to J. J. Tisen, of Norris City, Illinois, who makes the nomination, that is just how this tree started. Mr. Tisen writes:

Hosea Pierce and a boy comrade returned from the War of 1812 to their homes, near Norris City, Illinois. It was in the spring of 1815, and on January 8 of that year they had helped General Jackson whip the British in the Battle of New Orleans.

These boys both attended a log rolling on the old Pierce farm that spring, and as they were returning to the house after their day's work, made a wager who could vault the farthest, using their cottonwood handspikes as vaulting poles. They both left their handspikes sticking in the soft earth where they had vaulted, and during the spring rains of 1815 they both took root and lived.

One of these trees died about ten years ago and herewith is a picture of the other which is still living and is now 105 years old. This tree has a peculiar base on account of the unusual manner of planting; it is about 30 feet in circumference, 175 feet high with a very large hollow in the base of the tree which has been used as a housing for setting hens, a kennel for dogs and is always a fine playhouse for children.

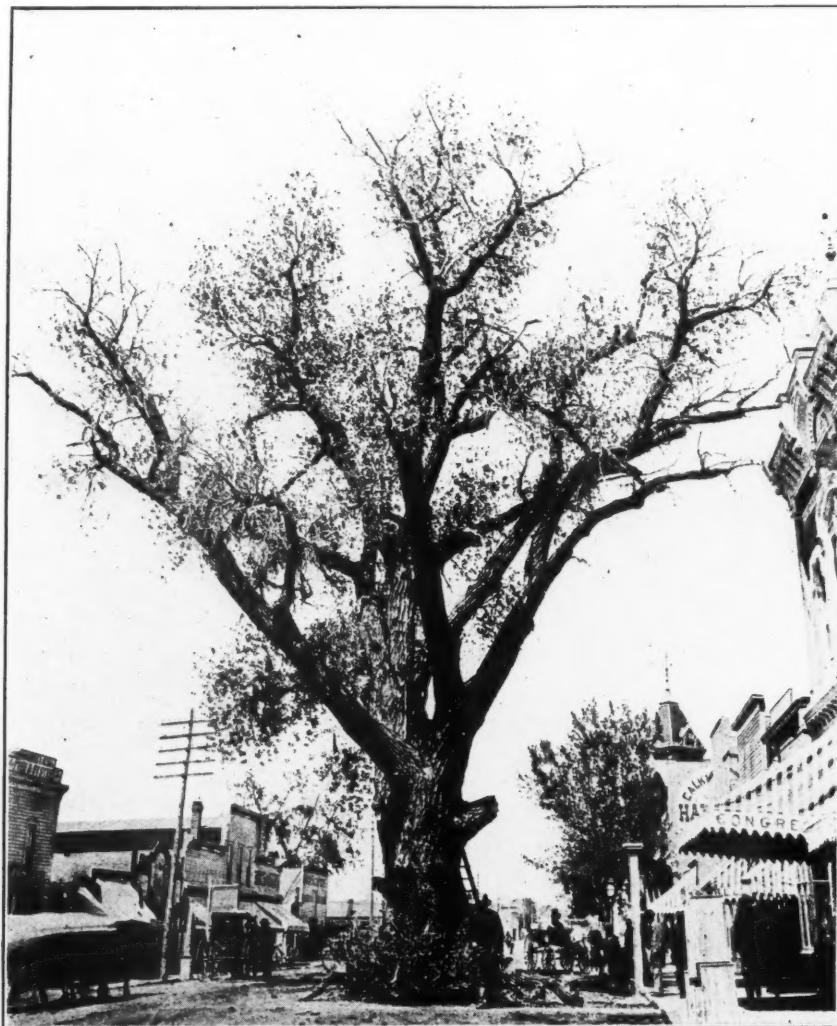
The baby boy in white, Lowell Lee Fellinger, standing at the base of this remarkable tree is a distant relative of the fifth generation from this gallant patriot, Hosea Pierce, who helped the great General Jackson "lick" the British at New Orleans.



THE "VAULTING POLE" COTTONWOOD

"HALL OF FAME" FOR TREES

Beneath
this tree, nomi-
nated for a place in the
Hall of Fame, the first white
woman who died in Colorado was buried.
Thirty-six people were massacred by the Indians
near this tree and fourteen men have been hung on it.
Theodore Anderson obtained this copy of the original picture for



THE OLD MONARCH OF PUEBLO

the American Forestry Association. The tree stood in the middle of the street in Pueblo and was cut down June 25, 1883.

The age was estimated at 380 years. The circumference of this cottonwood was 28 feet. A cross piece of the tree is on exhibition in the Mineral Palace at Pueblo.

"HALL OF FAME" FOR TREES

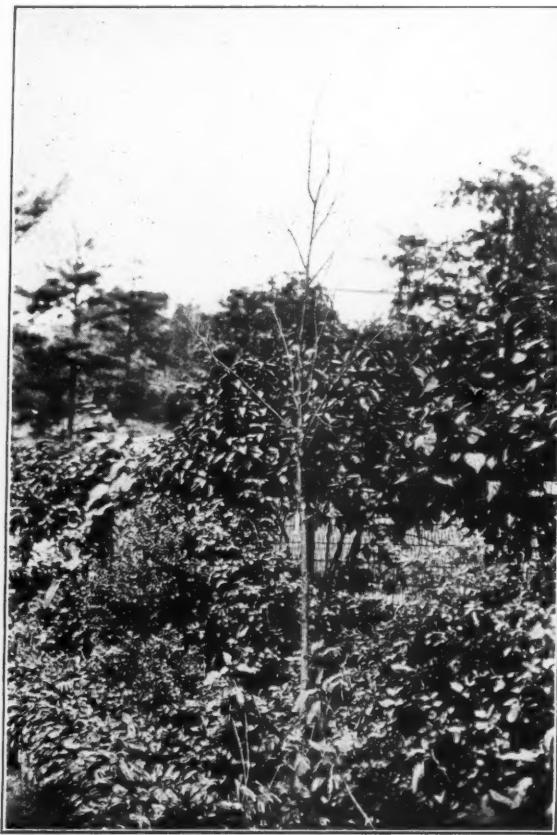
In the street at Carbondale, Pennsylvania, standing in front of the property of W. W. Watt, is an elm that is considered one of the most perfectly proportioned trees in the United States. It has been nominated for the Hall of Fame for Trees, being compiled by the American Forestry Association at Washington, which is collecting data of all trees with a history in this country or any other. Is there a famous tree in your town? This tree has been nominated for the "Who's Who" by E. M. Peck, who measured the diameter at two feet eight inches and the height at seventy feet. The age of the tree is not known.



THE CARBONDALE ELM

Association at Washington, which is collecting data of all trees with a history in this country or any other. Is there a famous tree in your town? This tree has been nominated for the "Who's Who" by E. M. Peck, who measured the diameter at two feet eight inches and the height at seventy feet. The age of the tree is not known.

"HALL OF FAME" FOR TREES



(Courtesy, N. Y. City Dept. of Parks)

THE OAK FROM STRATFORD-ON-AVON

A little oak from faraway Stratford-on-the-Avon was planted in Central Park, New York, a few years ago, and it has been nominated for the Hall of Fame by Miss Viola Overman. The treeling was sent to Walter Hines Page, America's ambassador to the Court of St. James, by the mayor of historic Stratford, and the precious package was immediately shipped to the Shakespeare Garden Committee of Central Park. An appropriate program was arranged, and with much stately ceremony, the famous little stranger was planted in that corner of the Park known as "Garden of the Heart."

The "Corner Oaks" at the foot of Marlin's Mountain at Marlinton, West Virginia, are nominated for a place in the Hall of Fame of the American Forestry Association by Andrew Price. These oaks were marked "General Andrew Lewis, October 6, 1751." General Lewis was the hero of Point Pleasant and was the military trainer and patron of George Washington, who tried to get Lewis appointed commander-in-chief of the armies in the Revolutionary War, but afterward the appointment came to Washington himself. Marlinton is on a bottom known as the habitation of the first English settler west of the divide. Mr. Price says the oaks are the oldest marked corner trees in the Mississippi Valley.



"CORNER OAKS" AT MARLIN'S MOUNTAIN

"HALL OF FAME" FOR TREES

For the Old Mulberry Tree at St. Mary's, Maryland, the claim is made that it was the most famous tree in the colonies. The claim will be disputed by many, particularly by the friends

of the Great Tree on Boston Common which saw so much history written. Both trees fell in 1876, one hundred years after the Declaration of Independence. All the history of

Maryland is written around the Old Mulberry for it was there Lord Calvert landed and it was for years the site of the capital of Maryland. The Old Mulberry Tree is nomi-

nated for a place in the Hall of Fame by Mrs. Delia Harris Maddox, who has written a poem about the famous tree. To



THE OLD MULBERRY TREE

Mrs. James Berry, of Washington, we are indebted for a picture of the tree. The picture is made from a drawing

penciled in 1852. Mrs. J. Thomas Brome, of St. Mary's, and Mrs. Maddox have obtained much interesting data in connection with the tree and J. W. Thomas in "Chronicles of

Colonial Maryland." As far as known Mrs. Berry had the only piece of the tree in existence. Bits of this she presented to E. B. Calvert, of the U. S. Weather Bureau, and

to Dr. George W. Smith, of Washington, but a larger piece, carved with an anchor, Mrs. Berry has presented to the American Forestry Association, and it is a real relic.

MOTHS AND BUTTERFLIES

BY R. W. SHUFELDT, M. D.

(Photographs by the author)

SHOULD you happen to be passing through a piece of woods almost anywhere in the Atlantic States during the latter part of July, woods containing maples, oaks, poplars, and others, there would be noticed scattered here and there upon the ground under the oaks or maples, certain little black, barrel-shaped bodies, each about a quarter of an inch in length. It found, it would be well to bring the leaves of that tree under most searching observation. If you have good eyes, it will not be long before you will locate overhead a very large caterpillar, quietly munching a leaf. Should it prove to be the big, hairy specimen here shown in Figure 1, you will have discovered the larva of one of our most elegant and largest moths—the Imperial Moth or *Basilona imperialis* (Figs. 1 and 3). Your giant caterpillar may either be a bright green color or a dull brown—it is the same species, however. Such examples of different coloring of caterpillars are to be observed in the case of several other species; but when the moths emerge from the pupae of either the green or the brown ones, all the characters are the same, quite irrespective of the color of the caterpillar.

To get the specimen home, the best way to do is to cut off the twig bearing the leaf upon which it is feeding—say a couple feet of it, including six or eight of its leaves. This will be the best kind of a perch for it in the event you desire to obtain a negative of the specimen. In the home workshop or study-room your *Basilona* caterpillar should be carefully placed in a cage, and regularly fed with fresh green leaves of the species of tree upon which you found it. In due time it will pupate—you will discover the pupa

somewhere in the cage, the dark brown thing having much the same appearance as the pupa of the Regal Moth.

The pupa must now be left perfectly undisturbed in a warm room until the moth issues from it. Some morning,

upon looking into the cage, this very thing has come to pass. Your specimen may be suspended like the Regal Moth here shown in Figure 4, either on one of the sides of the breeding-box, or from some dried leaf or twig within it. Often it is only holding on by its fore feet; is either perfectly quiet, or its wings may be trembling. In any event, it will not be spread out in any such fashion as are the two Imperial moths shown in Figures 2 and 3. These are cabinet specimens, and beautifully mounted ones at that.

The female moth is much larger than the male; and while the forms of the antennae are different, the basic color of the wings is the same—a rich canary yellow both above and below. On the upper side of the inferior wings there is, in either sex, an oblique, narrow band of pinkish purple, with an isolated, small circle of the same color above the middle of it. In addition to this there is a thickish sprinkling of the same color, as fine dots, all over the wings, which, in the male, runs into solid areas at the bases of the wings, which area, on either side, is four times more extensive in the superior wings than in the inferior pair.

In the female these solid areas of color are represented only by rather broadish zigzag lines. Again, in the male, there is a solid, elongate patch of the same tint occupying the outer part of either superior wing, coming clear to its edge for the entire length. There is also a zigzag, oblique bar here, running from the outer upper angle



A FULL-GROWN LARVA OF THE IMPERIAL MOTH, NATURAL SIZE, FROM LIFE

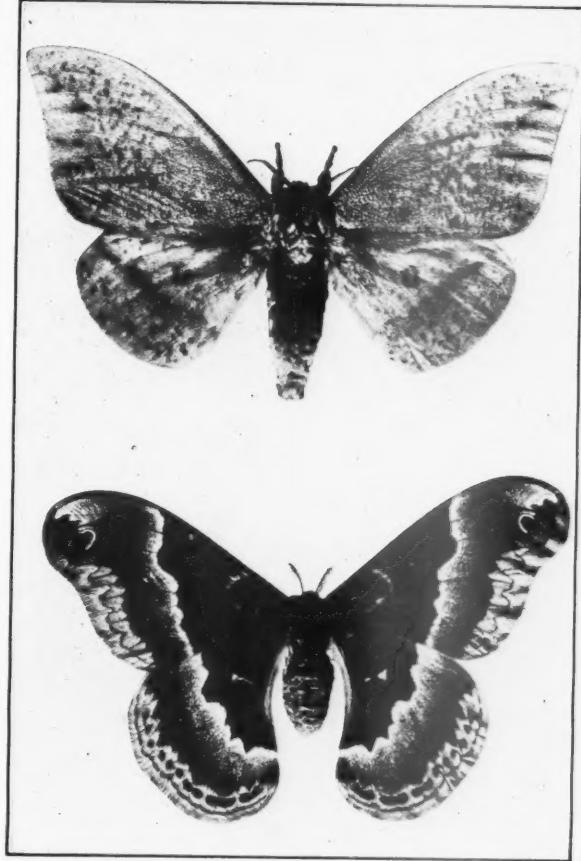
Figure 1. This big caterpillar (*Basilona imperialis* of Drury), is an omnivorous feeder on the leaves of trees and shrubs; it may be of either a green or a brown color, a dichromatism that in no way affects the moth. Another peculiarity is their hairiness, here well shown.

of the wing to the lower margin at the junction of its middle and outer thirds. These bars are also seen in the female; and in either sex are seen two small, independent circlets, situated rather above the middle of either of the superior wings.

In these moths, the only markings repeated on the under sides of their wings are the oblique bars and the circlets, which latter are reduced to solid, big dots. Both sexes have their abdomens marked by bands of the same pinkish purple seen on the wings, there being one or two more bands in the male, in which the remainder of the body, apart from the head, presents areas of this color, it being nearly solid.

There is a pair of horns on each of the two leading segments of the body of the larva of this moth, and these are proportionately larger in the younger stages.

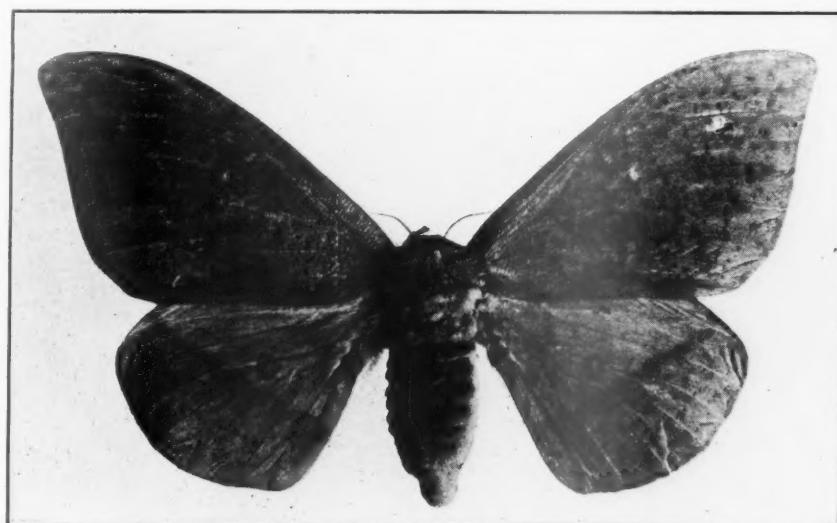
Although the larva of this Imperial moth is an omnivorous feeder in the plant world, it can do no material harm, in so far as the writer's observations go, to the trees of the forest, or to those planted for shade in towns and cities. They do not build a web; only a few specimens ever occur on the same tree, and unless one knows how to search for them, they are but rarely observed. This is true of all the larvae of our big moths, and of not a few of the smaller varieties. On the other hand, there is not a single moth in



THE SUPERIOR VIEW OF A MALE OF THE IMPERIAL MOTH (UPPER CUT), WITH A SIMILAR VIEW OF A FEMALE OF THE PROMETHEA (*Callosamia promethea*).

Figure 2. Both of these moths belong in the collection of Mr. Wm. Schaus, of the United States National Museum. The male "Spicebush" is an entirely different looking insect from the female of the species.

with a book. Sometimes only one solitary moth would visit me, while on other nights they would pour in in a continual stream, keeping me hard at work catching and pinning till past midnight. They came literally by thousands. These good nights were very few. During the four weeks that I spent altogether on the hill I only had four really good nights, and these were al-



UPPER VIEW OF A FEMALE SPECIMEN OF THE IMPERIAL MOTH

Figure 3. This fine example was collected by Mr. G. Beyer, and is now in the United States National Museum. It is a pale yellow, with markings of purplish bands and with speckles and other spottings.

our fauna that is not worthy of our highest admiration, in so far as its form and coloration go. The markings and tints in some species are simply gorgeous; and yet they pale in the presence of some of the moths of tropical countries.

One of the most remarkable experiences in capturing moths is given by Wallace in his book "The Malay Archipelago." Wallace was at Sarawak, Borneo, early in December, 1885, and occupied a cottage in the hills. "On one side of the cottage there was a veranda, looking down the whole side of the mountain and to its summit on the right, all densely clothed with forest. The boarded sides of the cottage were whitewashed, and the roof of the veranda was low, and also boarded and whitewashed. As soon as it got dark I placed my lamp on a table against the wall, and with pins, insect-forceps, net, and collecting-boxes by my side, sat down during the whole evening to visit me, while on other nights they would pour in in a continual stream, keeping me hard at work catching and pinning till past midnight. They came literally by thousands. These good nights were very few. During the four weeks that I spent altogether on the hill I only had four really good nights, and these were al-

ways rainy, and the best of them soaking wet. But wet nights were not always good, for a rainy moonlight night produced next to nothing. All the chief tribes of moths were represented, and the beauty and variety of the species was very great. On good nights I was able to capture from a hundred to two hundred and fifty moths, and these comprised on each occasion from half to two-thirds that number of distinct species. Some of them would settle on the wall, some on the table, while many would fly to the roof and give me a chase all over the veranda before I could secure them. In order to show the curious connection between the state of the weather and the degree in which moths were attracted to light, I made a list of my captures each night of my stay on the hill. On twenty-six nights I collected 1,386 moths, more than 800 of them were collected on four very wet and dark nights. My success here led me to hope that, by similar arrangements, I might in every island be able to obtain abundance of these insects; but, strange to say, during the six succeeding years I was never once able to make any collections at all approaching those at Sarawak." Doctor Wallace then gives some of the reasons for this lack of success, as dryness of the season; residence in a town or village not close to a virgin forest; other houses in the neighborhood, and the interference of their lights with those in the house occupied by him, and so on.

In the United States there is another beautiful moth in *Callosamia promethea*, a species wherein the sexes are so different that the ordinary observer may well be pardoned for mistaking them for two very distinct species. Lutz, in his "Field Book of Insects," says: "I am sorry that such an authority as Holland should have called this species the Spice-bush Silk-moth, when 'Promethea' was already in common usage; furthermore, he says, truly, that the 'insects subsist in the larval stage upon a great variety of deciduous shrubs and trees, showing a special predilection for * * * spice-bush and sassafras, wild cherry, tulip and sweet gum trees.'"

Nearly every one in the Atlantic States, who pays any attention whatever to such things in nature, is familiar with the small, swinging, bag-like cocoons of the *Promethea* larva. Usually they are seen during the spring and winter months, suspended from the twigs of

the sassafras and spice-bush, and from some other shrubs and trees. *Promethea's* caterpillar is a handsome one, being of a bluish-green color, spotted, and ornamented with coral red tubercles on the second and third body segments, with another on the middle of the next to the last segment behind, and smaller ones on the intervening segments. Several authors have figured this larva, one of the best cuts being that of Riley's, used by Doctor Holland, who says: "Whether the silk produced by this common and easily reared species could be utilized in such a way as to make its production commercially profitable, is a problem to be solved in the future. No one up to the present time has succeeded either in reeling or carding the silk of the cocoons."

Years ago, Packard, Dimmock, Minot, Edwards, Morris, Brodie, Saunders, Lintner, Harris, and other entomologists, contributed to the life-history of this beautiful insect; but none of them seems to have very much to say about its being a dangerous tree-pest; and as a matter of fact, the harm it does in such directions barely amounts to anything worthy of notice. *Promethea*, however, is a beautiful creature in nature, and should be studied for its own sake, to the enlightenment of all who treasure knowledge as such, quite irrespective of the fact of there being any commercialism as its ultimate goal.

We have in our insect fauna two other species, namely the Tulip-tree Silk-moth and the White-banded Silk-moth (*Callosamia callleta*)—at least the present writer gives the latter insect that vernacular name because it may be distinguished

from the other two species by the single white band on the collar and by another at the base of the thorax.

The common *Promethea* ranges over nearly all the eastern part of the United States, from southern Canada to Florida, westward to the eastern boundary of the Great Plains.

In the case of the Tulip-tree Silk-moth, it does not attach its cocoon to the twigs of the tree upon which it is made, but it winds leaves about it. So, when the latter falls to the ground in the autumn, the pupæ go down with them. Up to date this moth has been found only along the Atlantic coasts, where it is by no means abundant.

Perhaps the most remarkable fact to be noticed in regard to these *Promethea* moths is the truly extraordi-



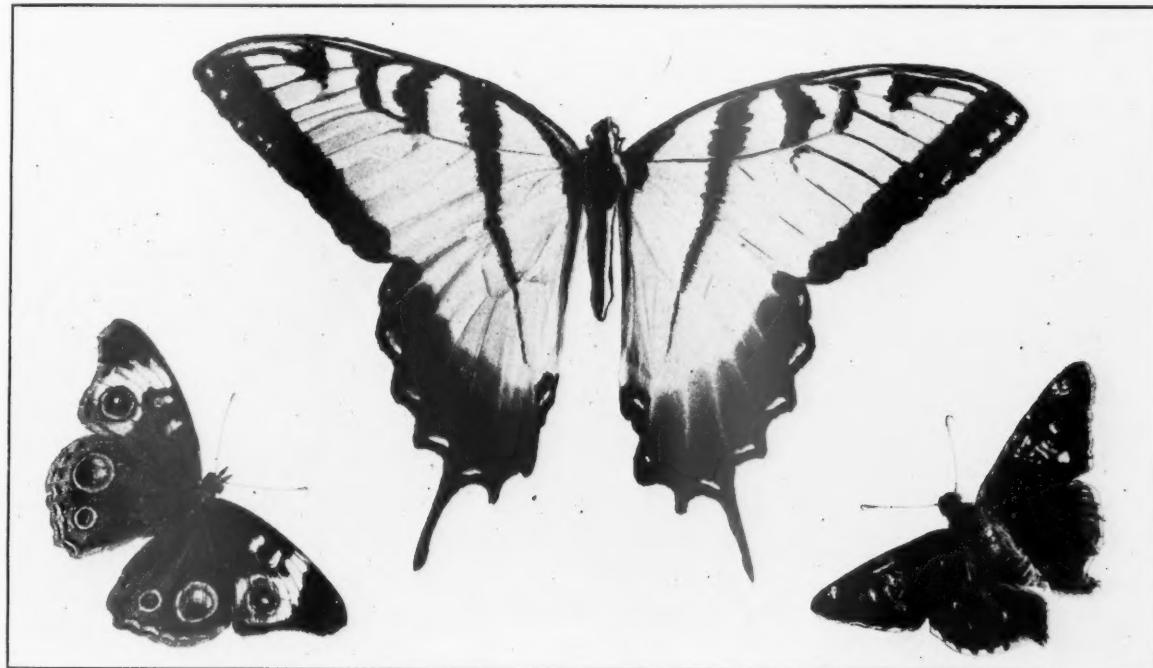
MALE REGAL MOTH SEEN UPON UPPER VIEW

Figure 4. Other figures of this species (the *Citheronia regalis* of Fabricius), are to be seen in the July, 1919, AMERICAN FORESTRY; it is here shown as it appears in nature, with drooping wings and clinging to a twig among the blossoms of a laurel bush. This specimen was reared by Mrs. Bert Elliott, of Washington, and is now in the collection of the writer.

uary difference to be observed in both form and coloration in the males and females. (Fig. 2, lower one, and Fig. 7). On their upper surfaces, the wings of the male are a deep snuff brown—that is for their inner moieties. These areas are limited externally by an irregular, zig-zag line of a much paler shade, which runs, on either side, about parallel to the body. Proceeding towards the margins of the four wings, this zigzag line is followed by a broad band of a paler shade of brown than the snuff color of the body and mesial areas of the wings described above. These wings are broadly emarginated with pale ash, broader in the anterior wings than in the inferior or posterior ones. There is a beautiful, round black spot in the middle of the superior outer angle of either anterior wing, bordered internally by a very fine blue line. Above

much lighter in coloration, which is often the case in these insects as well as in many butterflies.

Speaking of butterflies, one of the handsomest species we have in our United States fauna is the widely known Tiger Swallowtail (*Papilio turnus*). Every intelligent and observing schoolboy knows this big black and yellow insect by sight, though doubtless not one lad in fifty is familiar with even so much as its common name, to say nothing of its scientific name. The writer has met with a few boys—a very few boys—of from twelve to fifteen years, who could, off-hand, give both scientific and common names of this butterfly—one of our most conspicuous ones. In connection with this be it said, however, that the fact generally came to light that the fathers or mothers of those boys were either professional entomolo-



THREE BEAUTIFUL AND WELL-KNOWN BUTTERFLIES

Figure 5. In the center of this cut is an elegant specimen of the common Tiger Swallowtail butterfly (*Papilio turnus*), seen on upper view. The small butterfly in the lower left hand corner is a Buckeye, the *Junonia coenia* of Hubner, while the one in the opposite corner is the silver-spotted skipper (*Erynnis tityrus*) of Fabricius. These are all abundant forms of United States butterflies* of the Middle States, especially the big black and yellow one, which is widely-known to both city and country people.

this the wing is purplish, and exhibits fine, hair-like markings, which are carried down in a series of double loopings through the outer, ashy margin of either wing. This margin, in an inferior wing, has a subterminal, fine, wavy line all the way around, and within this again a row of dark spots, usually about 13 in number. The outer margin of the brown band that follows is serrated (Fig. 7).

Seen on upper view, the female is much paler in color, and the pattern and markings are far more complicated than in her consort. As to the pattern, it is well shown in the lower cut of Figure 2, while the emarginations are pale ash, spots of the lower wings pompeian red, the dark areas being of various shades of brown, purplish, black, and white zigzag lines, and the rest. On their under sides, the wings of these moths are

gists, or possessing intellectual qualities above the usual run of the average man and woman.

Our Tiger Swallowtail is a very abundant species in some sections, and more or less in others. Fifty years or more ago, it was a rare thing to see one of these butterflies in southern Connecticut, while they were frequently seen all along the Gulf States, and especially over the country about the city of New Orleans. In the latter locality the elegant green lizard, known as the American Chameleon (*Anolis*) appeared to be especially fond of them, being particularly expert in capturing specimens that happened to alight in a place where the reptile could stalk them. At the height of the season it is not an unusual sight, in a locality favored with respect to quiet and the flowers they love, to see twenty or thirty of these insects hovering over the same field. Virginia is a great

State for them, and Holland remarks that at Berkeley Springs, in West Virginia, he counted, one summer day, forty specimens hovering over the weeds and flowers in a small, deserted field. That was surely a good day for Tiger Swallowtails! In regions where they are especially abundant, it is not an uncommon thing to see six or eight settling on some moist spot in an open place in the woods, or on the edges of a big puddle in the road, or on certain chosen sites on the banks of rivers and streams. There, too, we will see other species of butterflies associated with them, as the black papilios of the region, the buckeyes, and the silver-spotted skippers (Figure 6).

On the 14th of August, 1919, the writer was collecting butterflies at the upper end of Rock Creek Park, Washington, D. C. It had rained heavily a few days before and at one place, on a moist spot in the middle of the wood-road, there were gathered on about a square foot of ground no fewer than thirteen elegant specimens of these Tiger Swallowtails; while flying up and down the road, in the shade of the many birch trees growing there, were many others, associated with several other species. With considerable difficulty a big camera was gotten into position to get a negative of that remarkable assemblage of insects. Unfortunately the removing of the focusing cloth from the camera, though done with the greatest possible care, gave them alarm; they arose *en masse* to disperse, alighting in various other places.

It is a strange thing that a creature as frail as the Tiger Swallowtail should be endowed with such wonderful powers of flight. With a body but of little more than an inch in length, and very slender, and with a wing extent rarely exceeding four and a half inches, this dauntless insect is as much at home in the air as any bird that ever lived. With strong and steady flaps of its wings—darting here, and hovering where fancy leads it—it soars, without apparent effort, to the tops of the tallest trees of the forest; sails in the bright sunlight through the open glades, soon to descend, in a zigzag course, to alight upon the royal purple head

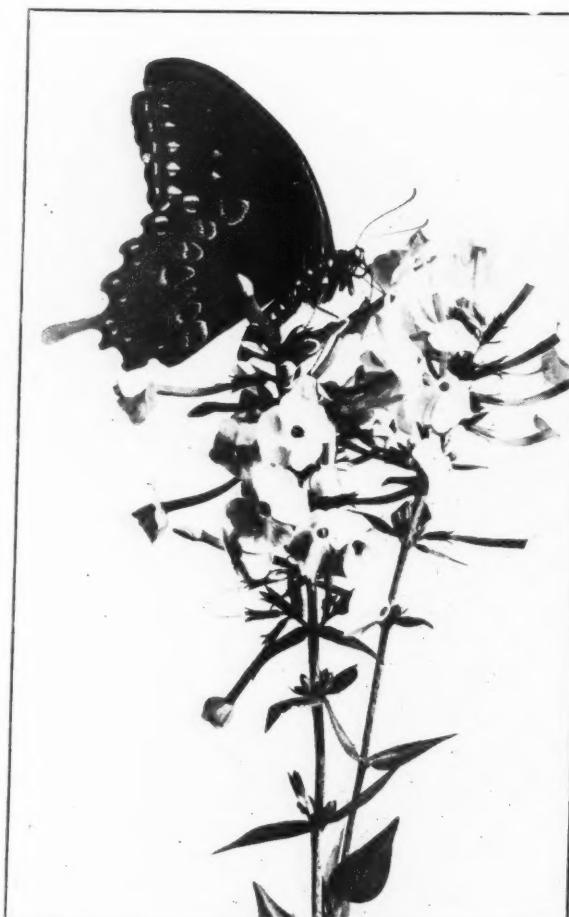
of an Ironweed. Upon meeting one of its own species, the two execute a kind of aerial waltz as they flit above, below, and around each other in their play on the wing. Coming out into the open fields, their giddy flight leads them here and there in varied course, as they visit the flower-tops of thistles, goldenrod, and other attractive plants. Growing thirsty, down they come to some low, flat bank of a sluggish stream, attracted by the presence of others of their kind, and sip away to their hearts' content, pausing only now and then for a brief frolic in

the sunlight with some other big, black and yellow vagabond of their own sort with no more in its bit of a brain to worry it.

When we come to study the black forms of the United States swallowtails of the genus *Papilio*, we have an interesting group of species for consideration. Doctor Holland gives us colored figures of the majority of these, or of such of them as had been discovered and described up to the date of appearance of his "Butterfly Book," and while his description and plates are extremely useful, there is much that is lacking in them. Only too often he omits any description whatever of these black swallowtails, and the reader must rest satisfied with the statement that "the figures in the plates obviate the necessity for describing this familiar but most beautiful insect, the glossy blue-green of which flashes all summer long in the sunlight."

Now the under sides of the wings in all of these Swallowtails of the genus *Papilio* present a very dif-

ferent color-pattern to that upon their corresponding upper surfaces; and yet, how few experts ever think of describing these. Recently, the writer has been paying considerable attention to this group, in the field and in collections; and forms of this black Swallowtail have been taken presenting color-patterns that are strikingly different from those found in any work on the subject illustrated by colored plates; later on some of these will be briefly described. While color-pattern is often of considerable value in the matter of determination of species, and to a lesser degree in classification, it is, as a



SPICE-BUSH SWALLOWTAIL BUTTERFLY JUST ALIGHTING UPON A HEAD OF PURPLE PHLOX

Figure 6. Nearly every one is familiar with this large showy black butterfly of the Atlantic States. Some of our insect collectors devote themselves entirely to this gorgeous group of insects, and their cabinets contain only representatives of them to the exclusion of all other forms.

matter of fact, of very minor importance as a factor when compared with the structural character of these insects. This is to some extent paralleled by what we find in birds—that is to say, in the differentiation of species and subspecies, color of plumage and color-areas of plumage constitute the chief characters by means of which we draw such lines. Geographical distribution is also of great importance in such matters, and to a far lesser extent this latter aid may be considered in the case of moths and butterflies. When we come to decide to which group any particular bird belongs—its external characters being of a puzzling nature—we resort to a more or less thorough study of its structure or anatomy, or, as modern biologists have it, its morphology.

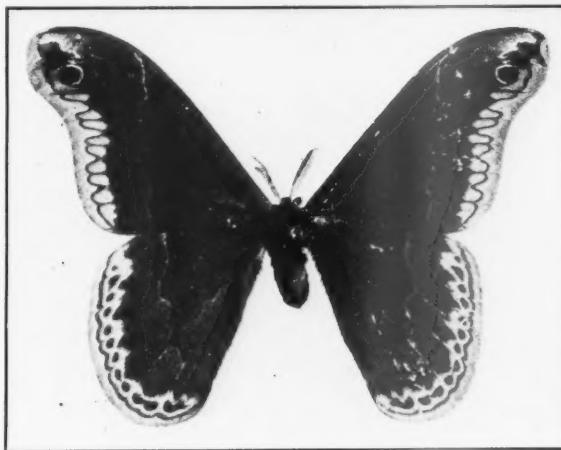
So it is with puzzling discoveries in the moth and butterfly assemblages. With respect to the vast numbers of new forms of them being almost daily taken by entomologists in different parts of the world, correct diagnoses can often be made off-hand; while in other instances abundant material of a comparative sort must be at hand and employed, in that the exact position in the system of some of these forms may be determined. Specimens have already come into the possession of science wherein doubts were entertained for some little time as to whether the insect, in any particular case, was really a moth or a butterfly.

This will account for the



THE CATERPILLAR OF THE PROMETHEA MOTH

Figure 8. This larva, here seen upon left lateral view, is of a light green color and very brilliant. The four anterior tubercles are of a bright coral-red color; the two posterior ones are of a pale yellow.



MALE OF THE PROMETHEA MOTH VIEWED FROM ABOVE

Figure 7. This figure, from the collection of Mr. Wm. Schaus, should be compared with Figure 2 of this article, when the striking difference in the males and females of this species will at once be appreciated.

certain trees. Frequently it requires but a few moments' search to discover the cause of it; and should it prove to be due to the ravages of a band of caterpillars, examples of these should



SAME LARVA IN THE FIRST STAGES OF MAKING ITS COCOON

Figure 9. For the above purpose, it rolled one of the leaves of the wild cherry, upon which it was feeding at the time of its capture.

ing admit of it, the forester or the cultivator of trees may do good work along the above indicated lines, which, if intelligently carried out, may lead to the securing of very valuable information. At times it may confirm the labors of others; then, again, should the investigator be more or less familiar with the literature on our moths and butterflies; should he possess the means to purchase the simple appliances for laboratory work, and have the

fact that both moths and butterflies have, in the case of many species, been anatomically studied with great minuteness. Such studies and investigations should interest every intelligent forester in this country; and should he be so placed that he cannot well enter such fields of research, he ought to do all in his power to encourage it in others and assist to the utmost whenever he can.

In passing through timbered areas, the forester will often note leaf destruction in the case of certain trees. Frequently it requires but a few moments' search to discover the cause of it; and should it prove to be due to the ravages of a band of caterpillars, examples of these should be at once collected and brought to the attention of some competent entomologist, who will make the proper use of such information when it comes into his possession. Damage and destruction has often been "nipped in the bud" in our forests through prompt action in such cases—that is, where a non-expert has made the initial report.

Sometimes, when his time and surround-

facilities and proper place to carry on his investigations, there is no reason why he should not be able to stamp his researches with the trade-mark of originality.

In the forest, nursery, orchard, or in the care of shade trees, he will soon become expert in the detection of the eggs of moths and butterflies where those insects deposit them in nature. Under the microscope these eggs are often very beautiful and vary greatly in form and color. They are usually deposited on the under side of leaves, and sometimes on their upper surfaces; in most instances on the leaves of the trees upon which the caterpillars feed when they hatch out. Such eggs are also laid upon twigs of trees and shrubbery. We have much to learn about the eggs of these two groups of insects, as for example the probable reason for the female's selecting the place where they are deposited; the number laid; their form and size; the fate of infertile eggs; whether the female lays one or two clutches,—that is, whether the species is single-brooded or otherwise; the time required for hatching, and numerous other points.

All these lines of inquiry and research are best pursued through the actual breeding of the specimens; and while this requires no end of work and patience, the information gained is, as a rule, of very distinct value and wide application. Regular breeding cages are made for this purpose; or the investigator may, if of a mechanical turn of mind, readily construct one for himself. Models will be found in any work treating of the subject; and if many are required for the breeding of different species, they may easily be made of proper-sized boxes with wire gauze tops. The writer has often constructed such cages or breeding-boxes, and successfully reared a variety of moths and butterflies. Usually this has been done by collecting the caterpillars, as they are far more easily discovered than eggs, and produce the imagoes much sooner. Both methods, however, should be followed. Very perfect specimens of many of our most beautiful moths and butterflies may thus be obtained for the collection and for study. Very recently, and in years gone by, the writer has thus secured cecropias, silk-worm moths, many lovely butterflies, io moths, *Philosamia cynthia*, *Hyphantria textor*, moths of the tent-caterpillar, and so on.

This is as far as this subject can be carried at present; at another time the question of collecting moths and butterflies in their haunts will be taken up, together with their subsequent preparation, preservation, and classification. One gains a very meagre idea of the extent and grandeur of the world's lepidoptera as a whole from seeing a complete collection of the moths and butterflies of the United States. We have very, very few large and showy butterflies; while in the case of the moths, were we to subtract from them a couple of dozen of the largest species, the collection would at once appear to be quite mediocre. We have some eight species of big Hawk-moths; then we have three or four big ones, or fairly large ones, in the *Samia* group (*Saturnidae*); the Regal, Luna, and Imperial moths; *Rothschildia orizaba* and *Callosamia*, which last is not very large (Fig. 2).

The balance are practically all small species; and while some of them are rather showy, the vast majority are not over an inch across, of some uniform shade of brown or tan, with usually inconspicuous markings.

To gain some idea of the splendor of some of the world's moths and butterflies, one should glance over nearly complete collections of them from the tropics as they occur in South America, Asia, Africa, and the great Eastern and Western Archipelago, with certain parts of Australia. Such collections are to be found in the United States National Museum in the reserve and duplicate series. There is, for example, a superb species that comes from Africa, wherein the "tails" to the hinder pair of wings are over eight inches in length. Then we have the gorgeous Atlas moth of the East Indies that measures a foot across from tip to tip of its upper wings, while its markings are most conspicuous. So bizarre and intricate are some of the markings of these moths and butterflies that any species among them would require a printed octavo page to describe them. The rare African butterfly, *Papilio antimachus*, has very narrow fore wings that, when spread, measure ten inches across. Its coloration is striking, as its fore wings are of a dark brown shade, marked with curiously shaped spots of a tan yellow, the hind wings being of a bright tan yellow, spotted and deeply emarginated with glossy black. Drury figured this species first in 1782; but more than eighty years passed before a second specimen was brought to Europe. Many collections on the Continent now have a specimen or two in them.

The rare south Brazilian butterfly, *Dynastor napoleon*, measures fully seven inches across, and is of a brilliant black, with an oblique white band between the middle and outer thirds of either fore wing, and with a broad tan-colored edge to the hinder wings. However, it is quite useless to attempt to give any description in writing that will convey to the mind of the reader any idea whatever of the truly magnificent splendor of scores of these great insects. In the entire series, every color known to man is to be found; and some of the combinations are so bizarre as to defy description in words. Gold, silver, and coppery markings are not rare, and occasionally the markings on the wings are transparent, being bordered with black or some vivid color, frequently orange, red, or azure.

Nearly all of our United States moths and butterflies are easily captured, but not so with many of the tropical ones of the latter-named group. The South American species of *Morpho* are magnificent insects. The great long-winged orange species (*M. hecuba*, Linn., and *cisseis*, Feld) are fully nine inches in expanse, and have a lofty, sailing flight, while some of the species with broader and shorter wings, such as the black-bordered *M. menelaus*, have a lower, but very rapid flight through the forest, and settle occasionally. The high-flying species very rarely come within reach. Collector Bates says that although he often saw the beautiful *M. rhetenor*, Cram., one of the most richly blue Amazonian species, he was only able to obtain two specimens in eleven years. This, and several blue species, have an orange female.

while others have two forms of female, one orange and the other blue; and others again have females resembling the males.

The high-flying species of *Morpho* which inhabit the mountainous districts of Western America, are much easier captured than those which frequent the plains, though their capture is often attended with difficulty and danger. One naturalist in Bogota fell over a precipice and broke his arm, and then found that he had three

days' journey to make on horseback before he could meet with a doctor to set it. Another naturalist, who was collecting in Bolivia, found that *Morpho godartii*, Guer., a beautiful species, of a rather light blue, which was previously almost unknown to entomologists, frequented an inaccessible ledge in the mountains; he was obliged to have himself lowered by ropes over the precipice before he could obtain it.

RAISE SALARIES OF FOREST SERVICE EMPLOYEES

IT has long been a matter of common knowledge that employment conditions in the Federal service are chaotic. This is not surprising in view of the fact that there has been no thoroughgoing reclassification of the service since 1853. The seriousness of the situation, however, has not been generally realized until within the last few years, when a growing discontent and an increasing flood of resignations has threatened the integrity of the entire service, including, of course, the Forest Service.

As a remedy for this condition the Joint Commission on Reclassification of Salaries has proposed the establishment of 1762 "classes" of positions, the positions within each class involving substantially the same duties and qualifications and receiving the same range of salaries.

Seven of these classes have to do with men engaged in forestry, which was classed by the Commission in the engineering group of services. Two of these classes (Junior Forest Aid and Senior Forest Aid) are sub-professional in character, and five (Junior Forester, Assistant Forester, Associate Forester, and Senior Forester) are professional and include only men having the equivalent of a degree from an institution of recognized standing with major work in the biological or engineering sciences. Aside from the degree of responsibility involved and the length of experience required, the definitions of duties and qualifications for the various classes in these two groups are so similar that sample definitions for one in each group will serve to indicate their general character.

Thus the duties of the Senior Forest Aid, who corresponds to the present Forest Ranger, are to perform, under immediate supervision, minor technical work in an organization engaged in scientific forest research or in the management of forests; and related work as required. Examples of such duties are assisting in forest investigations, or in timber and range estimating; planting; assisting in the preparation of material for timber tests; reading instruments at experiment stations; protecting and handling a minor forest unit. His qualifications are to be training equivalent to that represented by graduation from high school, and not less than two years' experience in forestry work.

The duties of a Junior Forester, who corresponds to the present Forest Assistant, are, under immediate supervision, to perform scientific or technical work of a

routine character in connection with the administration of forest areas and the utilization of products therefrom; and to perform related work as required. These duties may involve running boundary lines and mapping forests, involving the use of surveying, measuring, and drafting instruments; directing parties on forest and range valuation work; computing and compiling data for reports or records; inspecting or investigating minor details of forest work, such as forest planting, proper brush disposal, marking of timber on timber sale areas, collecting field data for growth, volume, and yield tables; making routine tests of apparatus, material, or processes. His qualifications are training equivalent to that represented by graduation with a degree from an institution of recognized standing, with major work in the biological or engineering sciences, preferably in botany, silviculture, forest management, or forest engineering.

The statements of duties and qualifications proposed by the Commission follow very closely those suggested by an Advisory Committee composed of representatives of the Forest Service. While the titles used are different from those now in effect, comparatively little change is made in recognized duties and qualifications, the proposals of the Commission serving to crystallize present practice. It is worth noting that in the bill proposed by the Commission for carrying into effect its recommendations, it is provided that whenever the equivalent of graduation from an institution of recognized standing is prescribed as a qualification for a class, the Civil Service Commission shall prescribe as such equivalent a standard or standards based on experience or demonstrated ability in the performance of duties similar to those prescribed for the class which will be accepted as such equivalent. This provision was of course included in order to make certain that men qualified by experience for entrance into the professional classes should not be debarred from them because of the lack of a college degree.

The compensation recommended by the Commission for the various classes of foresters is as follows: Junior forest aid, \$840 to \$1200 per year; senior forest aid, \$1200 to \$1800; junior forester, \$1800 to \$2160; assistant forester, \$2400 to \$3000; associate forester, \$3240 to \$3840; foresters, \$4140 to \$5040.

No salaries were recommended for senior foresters or for the chief of the forest service, these salaries being left for determination by Congress on the recommendation of the Civil Service Commission after consultation

with the head of the department concerned. This arrangement would make it possible for Congress to pay each individual in the highest professional class in accordance with his ability and the responsibility imposed upon him, irrespective of whether he happens to be in administrative or investigative work.

The salaries recommended for the various classes of foresters are the same as those recommended for corresponding classes in the other scientific and technical services, such as the engineering service, biological science service, and physical science service. Taking these services as a whole, the average salaries recommended represent an increase of about \$1000 per year for each individual in the group, or of some 40 per cent

over the present average. This is the largest percentage increase recommended for any group of employees outside of the teachers in the public schools of the District of Columbia.

As a necessary supplement to its recommendations regarding reclassification and compensation and in order to secure and retain an efficient personnel, the Commission points out that it is absolutely essential that there be consistent application of a wise employment policy providing for the scientific selecting and systematic training of workers, the measurement of individual efficiency, the advancement and promotion of the deserving, the elimination of the inefficient, and the retirement of the incapacitated.

FOREST PROTECTION WEEK

A CAMPAIGN to arouse public sentiment for the better protection of forests against fire that became nation-wide was started in the West and rapidly gained headway, it is announced by the Forest Service of the United States Department of Agriculture. The governors of a number of western states issued proclamations designating May 23-29 as "forest protection week," and urged all citizens that they unite their best efforts to prevent and suppress forest fires. In addition the movement had the active support of churches, commercial associations, rotary clubs, schools, fraternal societies, and a number of other organizations. The object of forest protection week was to bring forcibly home to the public the need of care to prevent fires from starting, and of energetic efforts to put out forest fires quickly, if they do start.

The new movement is unprecedented in this country and will be of much importance in safeguarding the Nation's forests and spreading the demand for their

better protection, officials of the Forest Service state. The West, they say, is now generally alive to the importance of keeping fire out of the woods. This is partly because of the great value of the present stand of timber, but it is also because of growing recognition of the importance of permanent forests and stable industries.

A large proportion of the fires which have in recent years caused the loss of hundreds of millions of feet of timber in the West are man-caused and preventable. This fact has stimulated a determination to cut down the number of fires. In aggressive action the West has, on the whole, decidedly taken the lead over the East where, in many States, little effort is made to protect the forests against fire.

Proclamations calling for public observance of a week were issued by the governors of Colorado, California, Idaho, Oregon, Utah, Montana, Wyoming, South Dakota and Washington. In New Mexico the governor proclaimed Arbor Day as fire protection day.

A FOREST QUESTIONNAIRE

THE Republican National Committee has sent out a questionnaire, in which among others, opinions regarding conservation of our forests are asked in the following manner.

"Our most pressing conservation question relates to our forests. Out of 850 million acres of virgin timber we have but 150 million left. We have effectually exhausted the timber lands of the Northeast and of the once magnificent forest states of Pennsylvania, Wisconsin, Michigan and Minnesota. About ten years will see the Southeast, which has been our greatest producer of saw timber for years, out of the running as a serious competitor in the lumber markets. Already much of the timber for the thickly populated East and Middle West comes from beyond the Rocky Mountains.

"Ninety-seven per cent of our lumber is cut from privately owned land. Private owners of commercial timber land regularly ignore conservation principles, and have thereby reduced more than 100 million acres capa-

ble of growing timber to desolate, unproductive wastes, barren of trees, and worthless for any other purpose. They neither cut so as to insure reproduction, nor will they assist nature by preventing forest fires on cut-over lands. This does not refer to the owners of farm wood lots. We cut annually 100 billion feet of wood. We grow now only 35 billion feet. At this rate we shall exhaust the forests of the Pacific Slope, our one considerable remaining supply, soon, and with certainty. It may be they will last 40 years; it may be 75 years. When the pinch comes, neither wood substitutes nor foreign supplies can relieve the scarcity at home. Only wise and vigorous conservation measures can prevent a grave timber famine—the beginnings of which are already felt.

"The practice of conservation in lumbering, coupled with the prevention of forest fires, will mitigate the coming shortage materially and hasten its cure. The growing of timber on all land in the United States chiefly valuable for that purpose would in time bring the annual

growth up to the present annual consumption.

"Do you favor laws to insure the lumbering of commercial timber without waste, the reproduction of forests on cut-over land, and the protection of all forests from devastation by fire?

"If so, do you favor bringing this about (a) by the nation and the states expanding their forest holdings to cover all commercial timber lands chiefly valuable for forest purposes not conservatively protected and managed by private owners? (b) By the nation and states holding large reserve areas of forest land, and enacting laws requiring private owners to protect and reforest their timber land?

"If the latter, do you favor the enactment of a separate law by each of the states, or one law by the National Congress?

"Do you believe that this country should cut annually more wood than it produces, without making provision for the future?

"If not, what provision should be made for another source of timber supply when the present is exhausted?

"What factors other than underproduction and the growing shortage of standing timber are responsible for the high prices of lumber?

"Do you believe that lumber producers and manufacturers should be permitted, under government supervision, to control overproduction in times of business depression?

"Do you believe that the combination of lumber producers and manufacturers under thorough government supervision, would or would not work both for the good of the industry and the public?

"Mention briefly what are the principal changes needed in methods of taxing forest lands, in order to encourage protection and reproduction and deal fairly with the private owner.

"Is the insurance of standing timber practicable, and, if so, should it be undertaken by private or government agencies?

"If it is true that we are growing annually only about one-third of the timber we use, and that our timber supply must be thus exhausted, do you favor restriction of the export of forest products?

"If forest land is to be bought by either nation or states, should the purchase money be raised by long-term serial bonds, the first series falling due far enough in the future so that timber produced on the land purchased may have opportunity to contribute toward paying the serial bonds as they fall due?"

HELP PREVENT FOREST FIRES

PEOPLE who visit the National Forests during the coming summer can best observe the slogan "Help Prevent Fires," by remembering the "Six Rules," issued by the Federal Forest Service:

(1) Matches. Be sure your match is out. Pinch it before you throw it away.

(2) Tobacco. Throw pipe ashes and cigar or cigarette stumps in the dust of the road and stamp or pinch

out the fire before leaving them. Don't throw them into brush, leaves or needles.

(3) Making camp. Build a small camp fire. Build it in the open, not against a tree or log or near brush. Scrape away the trash from all around it.

(4) Leaving camp. Never leave a campfire, even for a short time, without quenching it with water and then covering it with earth.

(5) Bonfires. Never build bonfires in windy weather or where there is the slightest danger of their escaping from control. Don't make them larger than you need.

(6) Fighting fires. If you find a fire, try to put it out. If you can't, get word of it to the nearest United States forest ranger or State fire warden at once.

DO YOU KNOW THIS MAN?

This is the man
That struck the match
That burned the trees
That furnished the logs
That fed the mill
That sawed the boards
That formed the house
That Jack built.

A TREE GAME

1. Which tree a kissing game could play? _____
2. And which its father's name could say? _____
3. Which shall we wear to keep us warm? _____
4. And which do ships prefer in storm? _____
5. Which shows what lovelorn maidens do? _____
6. And in your hand which carry you? _____
7. And which is it that the fruit men fear
Which makes a call each seventeenth year? _____
8. And from their pipes men shake which tree? _____
9. Which tree does a bad boy hate to see? _____
10. Which like a man bright, dapper, neat? _____
11. Which is a girl both young and sweet? _____
12. And on which do the children play
With pail and shovel all the day? _____
13. And to which tree shall we now turn
For goods to wear and stuff to burn? _____
14. And now divide you one tree more
You've part of a dress and part of a door? _____
15. Which tree is never seen alone? _____
16. And which in church doth office hold? _____
17. And which is a town in Ireland old? _____
18. For this one do not look so far
Which tells what charming people are? _____
19. The carpenter doth use which tree
To make his wall as straight as can be? _____
20. And to which tree do urchins call
To show you shouldn't have looked at all? _____
21. Which tree on calendars find you? _____
22. Which is a joke told times not few? _____
23. And on our feet we'll wear which tree? _____
24. And which our hero's crown shall be? _____
25. Another tree to find just try
For fish and fuel for a fry? _____
26. Now, last of all, what tree have we,
The first an animal faithful indeed,
The second our country's industrial need? _____

(The answers will be published in the August issue of AMERICAN FORESTRY.)

*Underwood & Underwood.*

PLANTING BY MISSOURI WOMEN'S CLUB

This tree was planted by the Missouri Women's Club of New York City, near Grant's Tomb on Riverside Drive, in honor of David Rowland Francis, former Governor of Missouri and former Ambassador to Russia. Each year the club plants a tree in honor of some famous Missourian.

*Underwood & Underwood.*

TREE PLANTING IN HONOR OF DEAD MARINES

In memory of the gallant Marines who have "gone west," mothers of the Marines marked "Mother's Day" in New York City by planting memorial trees in honor of the sons who gave their lives to their country in the World War. The trees were placed on The Mall, in Central Park, with very impressive ceremonies.

MORE TREES TO HONOR OUR HERO DEAD

TO the University of Illinois goes the honor of being first in 1920 to set before the country on a big scale what a college can do in memorial tree planting. One hundred and seventy-three trees have been planted in honor of her dead. Of course it is to be remembered that Illinois is a big school and consequently

west coast, plans are now being made for memorial tree planting next Armistice Day under the direction of Carl Gould, the university architect. The O. A. C. Forestry Club at the Oregon Agricultural College, Corvallis, Oregon, has dedicated three scarlet oaks to the memory of members of the Club. The dedication was by H. S.

The University and the State are grateful for this sublime attempt on the part of the students of the University to keep alive the names and deeds of their fallen comrades.

—Dean Davenport of the College of Agriculture.

MEMORIAL TREE PLANTING



MILITARY DRILL FIELD

April 20, 1920

One o'clock



UNIVERSITY OF ILLINOIS MEMORIAL TREE PLANTING

The University of Illinois honored her hero dead by planting memorial trees and registering them on the honor roll of the American Forestry Association. The diagram shows the marker as pictured on the front page of the official program and the way the trees have been placed as part of the scheme for the Military Drill Field.

Captain Babbitt read the names of the Illinois dead. As these names were read the student brigade was brought to present arms and the civilian portion of the crowd stood with bared heads. The trees were planted along the terrace in front of the Armory, down South Sixth Street, extended to the cavalry stables, and then west across the drill field to South Fourth Street. They were planted in an avenue 40 feet wide, with a distance of 50 feet between the trees in the rows. Groups of trees were also planted at both ends of the Armory. Each tree bore a nameplate for the man it represented. Tug Wilson, president of the Union, appointed the following to carry out the work: P. A. Niebergall, chairman, George Buchanan, G. E. Milner, S. D. Owne, R. S. Firebaugh, R. W. Slocum, C. V. Arnold, C. E. Baker, F. E. Carver, R. W. Lambert, C. C. Shade, Helen Van Inwegan, L. L. Corrie, H. R. Bowditch, R. G. Carlson, Ray Dodge, L. M. Patton, L. S. Holler, V. T. Belloff, R. V. Watson, W. M. Kimmelshue, G. C. Sprague, B. S. Pickett, C. F. Hottes, W. Trelease, F. N. Evans, C. Crandall, H. B. Dorner, A. W. Jamison, W. A. Ruth, W. F. Handschin, W. P. Flint, A. S. Colby, W. S. Brock, H. B. Tukey, J. C. Blain, J. W. Lloyd, A. E. Atkinson, and Miss Mary E. McAdams.

her percentage of "heroes gone west" totals higher than some other institutions of learning. It in no wise discredits other schools for the fine spirit is the same in all. It just so happens that Illinois has the ground on which to do something on a very impressive scale. Other colleges have taken up the memorial tree planting idea. At the University of Washington, on the far

Newins, associate professor of forestry, and the trees were for E. B. Blackden, Owen W. Johnson and Richard W. Wilmot. Johnson was with the Twentieth Engineers.

At Urbana the University of Illinois carried out a program of unusual merit. The trees were marked with the bronze marker designed by the American Forestry Association and registered on the honor roll. The Daily

Illini "covered the story" in fine fashion. The exercises were followed with a call for editorials on tree planting from the School of Journalism and these were sent throughout the State as a part of the campaign of education.

The United Daughters of the Confederacy at Fort



NINE TARRYTOWN HEROES HONORED

On the lawn of the North Tarrytown, N. Y. High School, nine memorial trees have been planted in honor of pupils who gave their lives to their country. Addresses were made by Justice Winfield L. Morse, of the Board of Education, and by Frank L. Young, County Judge. The trees were planted in memory of Daniel Clemons, John A. Kelly, Alon H. Levy, Kenneth Pollock, Maurice Powers, Michael Sautz, Harold Scofield, Howard Slawson and Lester Storms.

Smith, Arkansas, have paid a graceful tribute in memorial tree planting to the Red Cross and to the Y. M. C. A. Twenty magnolias have been placed in the form of a cross and three in the shape of a triangle as a mark of esteem for the two organizations. More tree planting is to be carried out



National Photo

"ARLINGTONS IN FRANCE"

Such impressive scenes as marked the dedication of the amphitheater at Arlington will be repeated some day in France, when the War Memorials Council, appointed by Newton D. Baker, the Secretary of War, shall have completed its labors. The plan in prospect provides for caring for the graves of the heroes who gave their lives for humanity. There are to be memorial trees and roads of remembrance in the scheme which includes at least three resting places, and the American Forestry Association has been appointed a member of the Council by the Secretary of War.

in the fall. Mrs. Maggie Haines, of the United Daughters of the Confederacy, writes the Association and calls attention to the fact that "the magnolia is on dress parade the year around." At Tuscaloosa, Alabama, the United Daughters of the Confederacy in co-operation with the American Legion and veterans of other wars, have planted willow oaks in a double grove that connects the University with Tuscaloosa. The

American Legion is taking up memorial tree planting everywhere and co-operating in the tree day program that is being sent out by the American Forestry Association.

At Warren, Pennsylvania, on Memorial Day, people from every corner of the county gathered for the memorial tree dedication in honor of the county's heroes.

Mrs. Silas E. Walker, of the Daughters of the American Revolution, was chairman of the Memorial Park Committee. At Scranton, Pennsylvania, an impressive memorial tree dedication marked Memorial Day. Mrs. Grace Storrs Watson, of the Scranton Shade Tree Commission, registered the



National Photo

ONE OF THE TREE PLANTINGS ON THE FIRST ARBOR DAY OBSERVED BY THE DISTRICT OF COLUMBIA

To mark the first Arbor Day celebrated in the District of Columbia, the Forestry Committee of the District Federation of Women's Clubs planted a tree in Rawlings Park on May 4th, in honor of the memory of J. Sterling Morton, the father of Arbor Day. Secretary of Agriculture E. T. Meredith made an impressive address, and Colonel C. W. Kutz, the engineer commissioner of the District, presented the tree to Dr. S. M. Hudelson, chairman of the Forestry Committee. Each club president placed a shovel full of earth on the roots of the tree.

the grades, the district schools and the public has set out the vacant lot east of the present high school as a grove in young forest trees. This lot was formerly a part of the old White Ash Coal Mine and is low ground with many sink holes, making it unfit for cultivation. Township Trustee E. A. Marratta conceived the idea of setting it out in young forest trees, thus providing an ample grove for future generations. He presented his idea to the Jackson township teachers who accepted it with enthusiasm and appointed Miss Eleanor Stewart, teacher of Botany and Agriculture in the Hymera High School, and Miss Nell Farley, Agri-



PLANTING 173 MEMORIAL TREES AT THE UNIVERSITY OF ILLINOIS

This photograph shows the speaker's stand and the trees, covered with canvas. At a signal, each tree captain stepped up for his tree, and with his crew of five men planted it. Some parents came over 150 miles to attend this exercise. Each tree was marked with an American Forestry Association marker.

trees planted with the American Forestry Association.

To every section of the land the educational campaign of the American Forestry Association has carried the message of the value of trees. The idea of the municipal wood lot is also being carried far and wide. An example of this is reported by the Hymera High School of Indiana. This report follows:

"The High School in co-operation with

cultural teacher in the grade school, to supervise planting.

"The high school science classes were put to work on a study of forestry and especially on trees adapted to low ground. Surveys were made and plans drawn of the ground, then the placing of the trees worked out. County Agricultural Agent H. S. Benson was called in and gave some valuable suggestions. The plot was then staked off, the ground divided and apportioned



National Photo
SECRETARY BAKER SPEAKS IN MEMORY OF THE HEROES

To every war mother in the land comes the opportunity to have a great part in the memorial resting places that will be established in France by the War Memorials Council. The Secretary of War, shown speaking at the dedication of the amphitheater at Arlington, has just appointed the Council which will have charge of this great work. In these "Arlingtons in France," the mothers of the land will find a fitting resting place provided for their sons.

to the various grades. All the boys of the high school and in the sixth, seventh and eighth grades participated in wielding the spade. The classes both at the grade and high school went to the woods and secured trees. About two hundred trees were planted, selections being made from the local forest trees. Among those used were soft and hard maple, oaks, walnut, beech, ash and sycamore. Many good specimens were brought in. The high school agricultural class has since gone over the field trimming and replacing."

The American Forestry Association congratulates Jackson township and her citizens who have enlisted in such a worthy cause; a cause in which an abandoned coal mine site has been put to work. Who knows the



Photograph by Murray Studio

145 ROADSIDE TREES PLANTED

The Lodi California Women's Club claims the honor of having started the first Road of Remembrance in California. Mrs. May Crocker, a member of the American Forestry Association, and chairman of the Conservation Committee of the Alameda District of the California Federation of Women's Clubs, reports that the planting has just been completed with the placing of 145 trees for one mile and a half out of Lodi.

value of such work? Only time can tell. The tree planter reaps a reward now despite what some folks may say. His reward is satisfaction in having made the world a better place to live in for those who come after him.



BROOKLYN HEROES HONORED

Four memorial trees have been dedicated by the Lexington Council No. 293, of the Knights of Columbus of Brooklyn, in honor of the heroes of that organization. The members of Leynack Post, of the American Legion, attended the ceremony, at which Father William B. Collins, of St. Anthony's Church, blessed the trees. The trees stand in honor of John Christopher Sheehan, George Alphonse Black, Francis James Foley and Thomas Raymond Nulty. In St. Anthony's Hall, Dorothy Nulty unveiled a tablet to the four heroes. Right Reverend Monsignor O'Hare, Joseph J. Hollowell, Samuel J. Toomey, Grand Knight, and Judge J. Gratton McMahon were the speakers at the impressive ceremony.

FACTS ABOUT DEPLETION OF OUR FORESTS

THAT the high cost of lumber and newsprint is due in no small measure to the using up of the forests east of the Great Plains was stated by the Secretary of Agriculture in forwarding to the Senate a report by the Forest Service on timber depletion, called for by resolution of Senator Capper.

This resolution requested information on: the depletion of timber in the United States; the effect of timber depletion upon the high cost of materials; the effects of lumber exports upon domestic industries, and the effects of depletion upon the concentration of timber ownership and manufacture and the relation of such concentration to the public welfare.

The outstanding facts reported by the Forest Service are:

That three-fifths of the original timber of the United States is gone and that we are using timber four times as fast as we are growing it. The forests remaining are so localized as greatly to reduce their national utility. The bulk of the population and manufacturing industries of the United States are dependent upon distant supplies of timber as the result of the depletion of the principal forest areas east of the Great Plains.

That the depletion of timber is not the sole cause of the recent high prices of forest products but is an important contributing cause whose effects will increase steadily as depletion continues.

That the fundamental problem is to increase the production of timber by stopping forest devastation.

The virgin forests of the United States covered 822 million acres. They are now shrunk to one-sixth of that area. All classes of forest land, including culled, burned, and cut-over areas, now aggregate 463 million acres, or a little more than one-half of our original forests. Of the forest land remaining and not utilized for farming or any other purpose, approximately 81 million acres have been so severely cut and burned as to become an unproductive waste. This area is equivalent to the combined forests of Germany, Denmark, Holland, Belgium, France, Switzerland, Spain and Portugal. Upon an enormous additional area the growth of timber is so small in amount or of such inferior character that its economic value is negligible.

The merchantable saw timber remaining in the United States is estimated roughly at 2,215 billion board feet, something less than three-fourths of which is virgin stumping. The rest is second growth of relatively inferior quality. About one-half of the timber left is in the three Pacific Coast States and over 61 per cent is west of the Great Plains. A little over one-fifth of the timber left in the country, 460 billion board feet, is hardwood.

There is now consumed or destroyed annually in the United States 56 billion board feet of material of saw timber size. The total yearly consumption of all classes of timber is about 26 billion cubic feet. Our depleted forests are growing less than one-fourth of this amount. The United States is not only cutting heavily into its remaining virgin forests every year, but is also using up the smaller material upon which our future supply of saw timber depends much more rapidly than it is being replaced.

The two striking effects of timber depletion already apparent are:

The injury to large groups of wood users and to many communities resulting from the exhaustion of the nearby forest regions from which they were formerly supplied; and, the shortage of timber products of high quality.

Less than five per cent of the virgin forests of New England remain and the total stand of saw timber in these States is not more than one-eighth of the original stand. New York, once the leading State in lumber production, now manufactures only 30 board feet per capita yearly, although the requirements of its own population are close to 300 board feet per capita. The present cut of lumber in Pennsylvania is less than the amount consumed in the Pittsburgh district alone. The original pine forests of the Lake States, estimated at 350 billion feet, are now reduced to less than 8 billion feet, and their yearly cut of timber is less than one-eighth of what it used to be. These four densely populated regions, containing themselves very large areas of forest land, are now largely dependent upon timber grown and manufactured elsewhere and are becoming increasingly dependent upon timber which must be shipped the width of the continent. The bulk of the building lumber and

structural timbers used in the Eastern and Central States during the last fifteen years was grown in the pine forests of the south. The virgin pine forests of the South Atlantic and Gulf States have been reduced from about 650 billion board feet to about 139 billion feet. The production of yellow pine lumber is now falling off and within ten years will probably not exceed the requirements of the Southern States themselves.

The United States at one time contained the most extensive temperate zone hardwood forests in the world. One region after another has been cut out. The production of hardwood products on their past scale can not be long continued. The scarcity of high grade oak, poplar, ash, hickory, walnut, and other standard woods is now placing many American industries in a critical condition.

The depletion of forest resources is not confined to saw timber. Since 1909, the country has ceased being self-supporting in newsprint paper and now imports two-thirds of the pulp, pulpwood, or newsprint which we require. This condition is due in part to timber depletion, in part to failure of the paper industry to expand in our western forest regions as the lumber industry has expanded. In 1919 the production of turpentine and rosin had fallen off 50 per cent. Within ten years the United States will lose its commanding position in the world's market for these products and may, in time, be unable to supply its domestic requirements.

The termination of the war found the lumber industry with depleted stocks. Production during the war had been much less than normal on account of shortage of labor and equipment and embargoes on transportation. A large part of the lumber produced had been taken by the government for war purposes. During the same time, the normal construction of dwellings and industrial structures and the use of lumber in many manufacturing industries had been greatly curtailed. Following the war, these pent-up demands were released. They caught the lumber industry not only with its stocks short and broken from war conditions but unable, on account of labor difficulties, lack of freight cars and bad weather in important producing regions, to respond rapidly with increased production. Aside from the general causes affecting prices of most commodities, the expansion of credit accompanied by currency inflation and the wave of speculation and extravagance—an "auction" lumber market would no doubt have resulted from the frenzied competition of buyers to obtain the limited stocks available, wholly inadequate to satisfy current demands.

Under the combined influence of the general conditions making for high prices and this situation in the lumber industry itself, prices rose to unprecedented limits. In March, 1920, average mill prices in the South and West had increased 300 per cent and more over the prices received in 1914, and average retail prices in the Middle West showed increases ranging from 150 to 200 per cent. In the case of high quality hardwoods and other specialized products, the average advance in eastern wholesale markets was from \$200 to \$250 per thousand

feet, and the demand at this advance was still unsatisfied.

The timber market has been more unstable than ever before in our history. Many industries have been unable to secure their supplies of timber at any price. The output of certain entire industries has been reduced as much as 50 per cent. A large speculative element has been introduced into the sale of lumber. Middlemen and manufacturers of wooden commodities have been able to pass on to the consumer and even augment any price they might pay. Necessities have fared worse than luxuries. The ramifications of lumber shortages and high prices are limitless and have affected seriously practically our entire population.

Obviously these lumber prices bear no relation to the cost of production and distribution. While the costs of production in the lumber industry have at least doubled as compared with 1916, lumber prices have much more than doubled and have become wholly disproportionate to operating costs. Excessive profits have been made by the industry. The division of these profits between manufacture and distribution has varied in accordance with circumstance and the ability of the various elements in the industry to dominate the situation. That prices have been too high is recognized by the best thought in the industry; and some manufacturers have sought to stabilize the market.

The depletion of timber in the United States has not been the only cause of these excessive prices on forest products, but has been an important contributing cause. It has led to the migration of both the softwood and hardwood lumber industries from region to region and each is now cutting heavily into its last reserves. The exhaustion of timber in nearby forest regions has compelled many large lumber consuming centers to import supplies from greater and greater distances. The wholesale prices on upper grades of softwood lumber in New York were from \$20 to \$25 per thousand prior to 1865 when mills in the same State supplied this market, from \$35 to \$45 between 1865 and 1917 when most of the supply came from the Lake States and the South, and are now entering a general level of \$130 a thousand feet with a large part of the material coming from the Pacific Coast. In the Middle West, the building grades of white pine lumber cut in Michigan, Wisconsin, and Minnesota, retailed at \$15 to \$20 per thousand feet prior to 1900. As lumber from the Lake States became exhausted and southern pine took over this market, the retail prices rose to a level of \$25 to \$35 per thousand feet. The replacement of southern pine by West Coast timbers now in progress is initiating a new price level of about \$80 to \$85 per thousand feet. The increased cost of transportation is but one factor in these new price levels, but it is an important one. The freight bill on the average thousand feet of lumber used in the United States is steadily increasing as the sawmills get farther and farther away from the bulk of the lumber users.

Much information is available to show the disadvantage of the lumber consumer whose nearby forests have been exhausted. Retail prices in the Ohio Valley, for ex-

ample, on certain grades exceed retail prices on the identical grades in Oregon in some instances by as much as \$50 per thousand board feet after allowing for all transportation costs. The curtailment of lumber output in the eastern regions not only has compelled the average consumer to pay more for freight but has enhanced the effects of congestion in transportation and of climatic and other factors limiting the production in regions which still support a large lumber industry. It has restricted opportunity for competition and thereby increased the opportunity of the lumber manufacturer or dealer to auction his stocks for higher prices. In other words, the effects of forest depletion can not be measured in terms of the total quantity of timber remaining. Its injury is felt particularly through the steady process of regional exhaustion. Our remaining timber is so localized that its availability to the average user of wood is greatly reduced. Particularly does such a restricted location of the timber supplies assume a serious national aspect in the face of transportation congestion and inadequate transportation facilities such as the United States is now experiencing. Had the forests and forest industries of the Eastern States still existed, the opportunities for regional competition in supplying the lumber markets and the wider distribution of lumber transport undoubtedly would have afforded a curb upon rising prices which did not exist in 1919.

The export trade in lumber does not have a serious bearing upon timber depletion from the standpoint of quantity; but does have an important bearing upon the duration of our limited supply of high grade timber, particularly of hardwoods. The exports of high grade oak, walnut, hickory, ash, and other woods essential to many industries in the United States which now seem probable will further enhance the shortage of such products for the domestic market and the tendencies already evident toward sustained high prices. On the other hand, the United States imports from Canada about two-thirds of its total consumption of newsprint or newsprint materials. The effects of our export trade in lumber should be considered from the standpoint of the specific timber grades or products whose depletion is most imminent and threatening to American industries.

The concentration of timber ownership has not changed materially since the exhaustive report made upon this subject by the Bureau of Corporations in 1910. One-half of the privately owned timber in the United States is held by approximately 250 large owners, the ownership of the remaining timber being very widely distributed. The tendency toward the acquisition and speculative holding of timber beyond operating requirements has

been checked and the present tendency is toward the manufacture of large timber holdings. At the same time, the lumber industry, particularly in the Western States, is going through a partial reorganization into larger operating and marketing groups. In this there is a tendency for small mills to disappear and small timber holdings to be blocked into larger ones adapted to extensive lumber manufacture. While there is still a large number of individual timber owners and of sawmills operating as separate units, the larger interests are acquiring a more dominant place in lumber manufacture in the West. It is to be expected that these large interests or groups will maintain, as time goes on, a fairly constant supply of timber for their manufacturing plants by acquiring smaller holdings. No information is at hand which justify a conclusion that monopolistic conditions on any general scale have grown out of this situation. There are many instances to the contrary. On the other hand, the degree of control of the timber remaining in the United States exercised by a comparatively small number of large interests will steadily increase as timber depletion continues, approaching a natural monopoly in character, and this control will extend particularly to the diminishing supply of high grade material.

In 1918 our per capita consumption of lumber was about 300 board feet. The homes and industries of the United States require at least 35 billion feet of lumber yearly, aside from enormous quantities of paper and other products of the forest. A reduction in the current supply of lumber below this figure would seriously curtail our economic development. Appreciable increases in lumber imports are not possible except at excessive prices. We can not afford to cut our per capita use of lumber to one-half or one-third the present amount—to the level of European countries where lumber is an important luxury. We must produce the great bulk of the timber which we need ourselves and we have the resources for doing so.

The solution of the problem presented by forest depletion in the United States is a national policy of reforestation. Increased and widely distributed production of wood is the most effective attack upon excessive prices and monopolistic tendencies. Depletion has not resulted from the use of forests but from their devastation, from our failure, while drawing upon our reservoirs of virgin timber, to also use our timber growing land. If our enormous areas of forest growing land, now idle or largely idle, which are not required for any other economic use, can be restored to timber growth, a future supply of forest products adequate in the main to the needs of the country will be assured.

CHANGE OF ADDRESS

It is urgently requested that all changes of address, whether temporary or permanent, be sent in promptly.

Both the old and new address must always be given.

Such co-operation will be helpful in avoiding the loss of magazines.

"THE AMERICAN FORESTRY ASSOCIATION

IN the words of an editorial in the *Buffalo Courier* "the American Forestry Association still sticks pluckily to its fight" for a national forest policy. This is but an example of the hearty co-operation on the part of the newspapers of the country with the American Forestry Association. They too are "sticking" with a right good will and are taking up forestry from every side. The *Buffalo Courier* puts this head on its editorial "What's the matter with Congress?" and says:

The American Forestry Association sticks pluckily to its fight for the passage of the senate bill authorizing the Secretary of Agriculture to make a survey of pulp woods on the public domain. It refuses to be discouraged by the failure of the last Congress to do anything in the matter.

In view of the increasing paper shortage the indifference of Congress to the whole paper question is hard to understand. Weeks ago the senate adopted a resolution authorizing the President to appoint a commission to take up the paper question with the dominion as well as provincial authorities of Canada, but the house has done nothing about it.

The proposed senate bill authorizes the Secretary of Agriculture (that means the forestry bureau) to make a survey of the classes and kinds of timber on the public domain (including the national forest, Indian and other reservations), which are suitable for pulp wood for newsprint and other forms of paper; also to report to Congress upon the present conditions in respect to the current consumption and protection of pulp woods.

Ten years ago the United States produced nearly all its supply of pulp wood; now two-thirds of it is imported. So rapidly has a change come about that only one-third of the newspaper issues last year in this country were printed on the product of American forests.

This fact alone should stir Congress to action—at least to the point of finding out "where we are at," what will be the probable condition in the near future and what it is possible to do to better the outlook.

Some of the other editorial opinions follow:

Detroit Free Press: The American Forestry Association has issued an appeal to the Federation of Women's Clubs of several States urging a special tree-planting campaign for Arbor Day. The rapid disappearance of trees along our

city streets, due to the natural processes of decay and death and the inroads of the ax clearing the way for business suggests that Arbor Day should be observed in a practical way.

Nashville Banner: The late Senator John H. Bankhead, of Alabama, was the author of legislation that provided Federal aid to road building. The senator had a practical turn of mind and always took great interest in projects of public improvement. He recognized the necessity for good roads and devoted much of the energy he put into his work in Congress to measures favoring highway construction.

It is natural and altogether proper that a Bankhead Memorial Highway should be suggested. In a telegram sent to Judge B. M. Allen of Birmingham, Alabama, president of the Bankhead Highway Association, Chas. Lathrop Pack, president of the

the soldier dead. Boy Scouts are planting trees in honor of Theodore Roosevelt. Families are starting memorials to their loved ones which may well be flourishing monuments of living green long after cunningly cut stones would have crumbled into dust.

Generally speaking, there is nothing and no person deserving of a memorial monument that cannot be appropriately marked by a tree of remembrance. And there is something peculiarly fitting in such a memorial. When a memorial stone is erected, the only close relationship those erecting it have with the object itself is through the medium of the pocketbook. Their share in the memorial begins and ends with paying for it. Even in choosing they are generally limited to a few patterns, much as if they were out to buy a suit of clothes.

With trees it is vastly different. In the first place there is the selection of the kind for planting. In this there is an opportunity for planting a tree which will reflect the characteristics of the one or ones whose memory it will keep green. Then there is the opportunity to cultivate this tree from year to year, to make it develop the best that is in it in the way of beauty. In doing this it is as if one were working day by day and year after year in building a monument worthy of the object of such attention.

And when it comes to a memorial to the soldier dead, what on earth could begin to equal a fine parkway with its array of trees of remembrance? Not only would such a memorial be a thing of beauty and a joy for many generations, keeping fresh the memory of heroes of the world's great crisis, but it would be a source of comfort in the heart of summer to countless thousands; perhaps, it would save the lives of many in the course of its existence. The soldiers died that those whom they loved might live. This memorial to them would live and bring new life to those whose freedom was won by the death of heroes.

By all means let us have trees of remembrance. Let us have them abundantly and for every possible memorial. They are the true monuments, the living memorials God has provided to hallow the holiest memories of every person and of every race.

Salt Lake Tribune: For several years past the American Forestry Association has been trying to prevent waste in the forests. Some improvement has followed the good work, but reforestation has not become general by any means, and much remains to be done. A Minnesota lumberman calls attention to the situation in these words:

WHEN YOU ARE GONE

Fort Lauderdale Herald.

Plant a tree. You found several here when you landed on this old earth and you've seen a great many cut down during your time. You have probably cut down a few yourself. The children who are born after you have passed on have a right to find a few trees standing. But they will not if every person who passes through this vale of tears cuts down a few and forgets to plant any. Plant a tree. Plant a dozen of them, and then you will have done something for the generations who follow you, even as some one did something for you ages ago.

American Forestry Association, urges that the Bankhead Highway be made a "road of remembrance" in honor of the late senator, who did so much for good roads not only in the South, but throughout the country. The suggestion is apt and appropriate. John Hollis Bankhead did Alabama long and valuable service, and in the matter of highways, as well as in other respects, the nation is his debtor.

Rochester Democrat and Chronicle: Interest is being renewed in the project of planting trees in memory of those who gave their lives for civilization and the safety of their country in the World War. This movement, which has the active backing of the American Forestry Association, has reached proportions far in excess of what seemed likely at its inception. Nor is it necessary that the tree memorial be to

STILL STICKS PLUCKILY TO ITS FIGHT"

"A timber famine is near. There are no substitutes for wood pulp and wooden ties and many other essentials of the industry. Nature cannot build a commercial forest in a million years unaided by law, against axes and fires, as they devastate now. Minnesota's most rapidly growing lumber forest cannot attain commercial maturity within fifty years in any event. Southern pine's exhaustion in many areas is only a decade and a half away, and the west coast will not last half a century. Germany and Massachusetts proved reforesting large tracts the surest of highly profitable long-term investments. Western States must get busy."

The advice to the western States is sound and should be followed.

Indianapolis Star: A good many trees have been planted here and there over the country by way of memorializing American soldiers who gave up their lives in the war. Mostly they are for individuals—a single tree set in a place somehow associated in his lifetime with the one who is gone. A number of groves or parks and stretches of roadway are planned to be planted in groups or in rows in honor of the fallen ones of certain communities. They call them "memory trees," which is a good name.

Of the single trees an illustration is one planted by pupils of the Force School in Washington, which was attended by Quentin Roosevelt when he was a young boy. He was the only former pupil to lose his life in the world war. A committee of twelve formed by appointment of a member from each class, will have care of the tree; as each member graduates from his class he appoints a member from the incoming class to take his place. Thus there will always be a committee at the school to look after this tree.

The trees planted at the Technical High School in Indianapolis were in honor of former pupils in the service and not for the dead. Women's clubs, highway associations, State forestry associations, and the American Forestry Association are taking an active interest in the movement. No more beautiful way of paying tribute to the boys who went to war could be devised than the planting of trees, and it is an undertaking to be encouraged. Memory trees, singly or in groups, or along "roads of remembrance" will be known for what they are quite as well as a carved monument and may be far more beautiful. But no memorial of the kind should be established unless arrangements for its future care are also made. We want no neglected memory trees.

Grand Rapids News: The American Forestry Association is heart and soul with the Massachusetts Forestry Association, as it is in sympathy with every move to conserve and to build up our forests. A national forest policy is imperative. The States should work in conjunction with the federal government, which already has completed several great undertakings calculated to increase the tree acreage of the country.

THE WOODPILE

By Henry L. Stoddard, in N. Y.
Evening Mail.

After all is said and done, the newsprint situation goes straight back to the woodpile.

That fixes the limit of supply. Newspapers have been used to basing their paper contracts on their needs; even in the crisis of the past four months it has not been possible to bring publishers to realize that the size of the woodpile is now and will be hereafter the determining factor in paper supply.

And the woodpile is fast disappearing. No longer is it just a step from the mill door; it comes over the rails now practically to every mill, and the haul grows constantly longer and dearer.

Newspaper publishers are not the only persons in the world who stand a lot of punishment before they abandon a habit; that is what they are doing so long as they regard the situation from their office viewpoint.

In ten years' time we have driven into Canada two-thirds of an industry that was in 1910 wholly our own!

We have wasted our resources like a spendthrift son; it is not a famine we face—it is an exhausted source of supply.

The big thing to do, of course—the essential thing to do, sooner or later—is to unite on a policy operative AT ONCE to reduce consumption, and to unite also on a programme that will restore our forest lands to productivity. There is enough land to grow all the timber needed for the nation's requirements: the trouble is that the timber is not there. Let us put it there; let us make the newsprint industry an American industry once more.

At this time, when lumber prices have soared to almost unheard-of altitudes, it ought not to be difficult to arouse the interest of every citizen in forestry.

Macon, Georgia, News: Of all the monuments that will be erected to the memory of our heroic dead, none will be more appropriate or impressive than the great forests, planted from American seed, that are to lift their heads on the battlefields of France.

The offer to supply these seeds was made by the American Forestry Association, and M. Jusserand, French Ambassador at Washington, has just expressed to that Association the thanks of the French Minister of Agriculture for the gift, with the assurance that the seed of the Douglas fir—one of the noblest of our American trees—will be sent to the departments of the Aisne, the Oise, the Ardennes and the Somme, for the reforestation of the region devastated by the war. The seeds of the leafy trees, such as oak, ash and poplar, will be sown this spring in the nurseries of the same school as that of Nancy.

Said Hamlet of Ophelia, in words of the most haunting melody in literature:

"Lay her i' the earth
And from her fair and unpolluted flesh
May violets spring."

So, too, these trees which had their birth on American soil will be literally fertilized by the blood of some of the best and bravest of our sons who fought and died on the sanguinary fields of France in the mightiest struggle of all time.

And no memorial that could possibly be devised appeals more strongly to the sentiment and to the sound judgment of the American people who see in the plan a wise provision to supply stricken France with the forests of which she stands in such need, and at the same time we provide a memorial to the dead, nurtured by their very life-blood, which shall typify the freshness and vigor of the American manhood offered up in sacrifice that the world might be freed from the German menace.

Who does not remember the lines of Byron on the field of Waterloo?

"And Ardenne waves above them her green leaves,
Dewey with nature's tear drops, as we pass,
Grieving, if aught inanimate e'er grieves
Over the unreturning brave."

Through all the years to come these noble forests in France, seeded from American soil, will bear living testimony of American heroism and at the same time will help to repair the devastation of the Huns.

Keokuk Constitution Democrat: The vital importance of maintaining the lumber supply is shown by one simple fact, brought out by the American Forestry Association, that there are more than fifty thousand wood-using plants in the United States, employing more than a million persons, and having an invested capital of three billions of dollars.



STATE NEWS



CALIFORNIA

THAT camping, now recognized as a national pastime, has reached its highest development in the National Forests of California, is the opinion expressed by District Forester Paul G. Redington. For proof, Redington points to the fact that in California, where the free automobile camp-ground originated, there are today a greater number of more attractive mountain camp-grounds than in any other one State.

"There is, moreover, no question as to the popularity of these campgrounds, nor of the National Forests as California's recreation grounds," he says, "for last year more than 800,000 people camped within them. And this year members of the camping fraternity will find new camps prepared for their convenience.

"In fact the demand for campgrounds equipped with some of the simpler modern conveniences has so far outstripped the financial resources of the Forest Service that we were threatened at one time with the possibility of being unable to care for this year's crop of recreationists.

"Fortunately, however, public and semi-public organizations including Boards of Supervisors, Chambers of Commerce, Automobile and Motor Car Dealers' Associations, and even, in some cases, individual motor car dealers, realizing the big opportunity for public service, have come to our aid. In the last two months, some \$10,000 has been contributed from such source and the work of installing the new camps is now progressing in full swing."

LOUISIANA

ASPECIAL legislative committee of the Louisiana Forestry Association, besides taking the action referred to in the editorial section of this issue, also approved changes in the present reforestation law of the State, liberalizing several of its terms. The present law permits a land owner whose holdings are not assessed at more than \$5 an acre to enter into a contract with the State Department of Conservation requiring the owner to reforest his lands; in return for the owner's effort at timber growing, the State agrees to reduce the taxes upon the land to \$1 an acre for a period of 30 to 40 years, and to keep them at this level throughout the contract period. The amendments proposed raise the \$5 limitation to \$10, and permit contracts for as short a term as 15 years. The assessment placed upon the land under a 15-year contract is \$3.50, however, and is reduced by 50c. for each 5-year period in excess of 15 years, down to the present rate of \$1 per acre for 40 years. Other minor changes in the laws were also approved.

The legislative committee which made the above recommendations for amendments and additions to the forestry laws was authorized and appointed at the spring field meeting of the Louisiana Forestry Association held at Urania, Louisiana, on May 6. On that day about 200 persons were the guests of President Hardtner, of the Forestry Association at an open-air meeting and picnic lunch near Urania. The meeting which was the most successful in the history of the Louisiana Forestry Association, was featured by addresses by President Hardtner, M. L. Alexander, Commissioner of Conservation, State Forester E. O. Siecke, of Texas, R. C. Bryant, President of the Society of American Foresters, Professor J. G. Lee, of the State University, and Miss C. C. Dorman, Chairman of the Forestry Committee of the Louisiana Federation of Women's Clubs. Before and after the meeting, inspection trips were made of the reforestation and experimental work being done at Urania by Mr. Hardtner, the State Department of Conservation, and the United States Forest Service. The senior class of the Yale Forest School, which is undergoing its final training at Urania, were among the many interested guests of the association.

At the business meeting in the afternoon, President Hardtner and Secretary R. D. Forbes were unanimously re-elected, and vice-presidents and an executive council, together with special committees, were newly named, after an interim of three year's comparative inactivity in association affairs, due to the war.

The Louisiana legislature is now in session at Baton Rouge, and with the Hon. John M. Parker, a life-long conservationist, in the governor's chair, prospects are very bright for the progress of forestry in Louisiana. A feature of the new governor's financial program, whereby large additional revenues are to be raised for the support of a Great Agricultural College and bettered state institutions, is the 2 per cent levy advocated by Gov. Parker on all of the natural resources of the state. This levy is to be placed upon these resources at the time of their utilization, and the revenue derived is expected to be about \$3,000,000. In the case of forest products, the 2 per cent tax is levied upon stumpage valuations at the time of cutting, and it is anticipated that between \$400,000 and \$500,000 will be raised in this way. The present tax upon forest products, which was the first levied by any state in the Union, amounts to only about \$65,000 a year. At present, one-fifth of the so-called severance tax on forest products goes to the support of the forestry work of the Louisiana Department of Conservation, and while the same ratio may not be main-

tained with the greatly increased tax, the new governor has announced himself in favor of a substantial appropriation for forestry work. The governor's 2 per cent tax on natural products is very popular, and has been agreed to by all of the large users of natural products, including not only the lumbermen, but the oil and gas interests. It is not likely, therefore, that the governor's program will meet with any substantial opposition in the legislature.

NEW JERSEY

THE New Jersey Department of Conservation and Development has just published an attractive and well illustrated circular entitled "Why Forestry in New Jersey," which presents the subject of forestry in a popular form.

It aims to bring about a greater appreciation of the latent value of the State's woodland, to the end that it may be protected from fire and abuse, and developed by proper management into a profitable resource.

Attention is called to the State Forests in North and South Jersey, which are maintained for the purpose of demonstrating the practicability and benefits of forestry practice. The public is encouraged to seek State aid in woodland improvement, forest planting, marketing of products, as well as in the planting and care of shade trees.

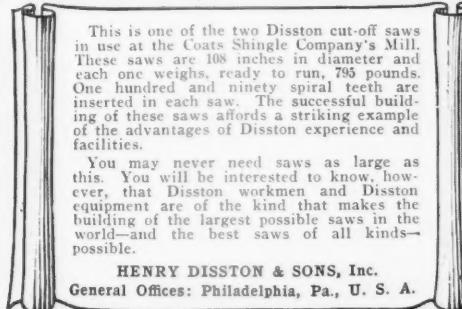
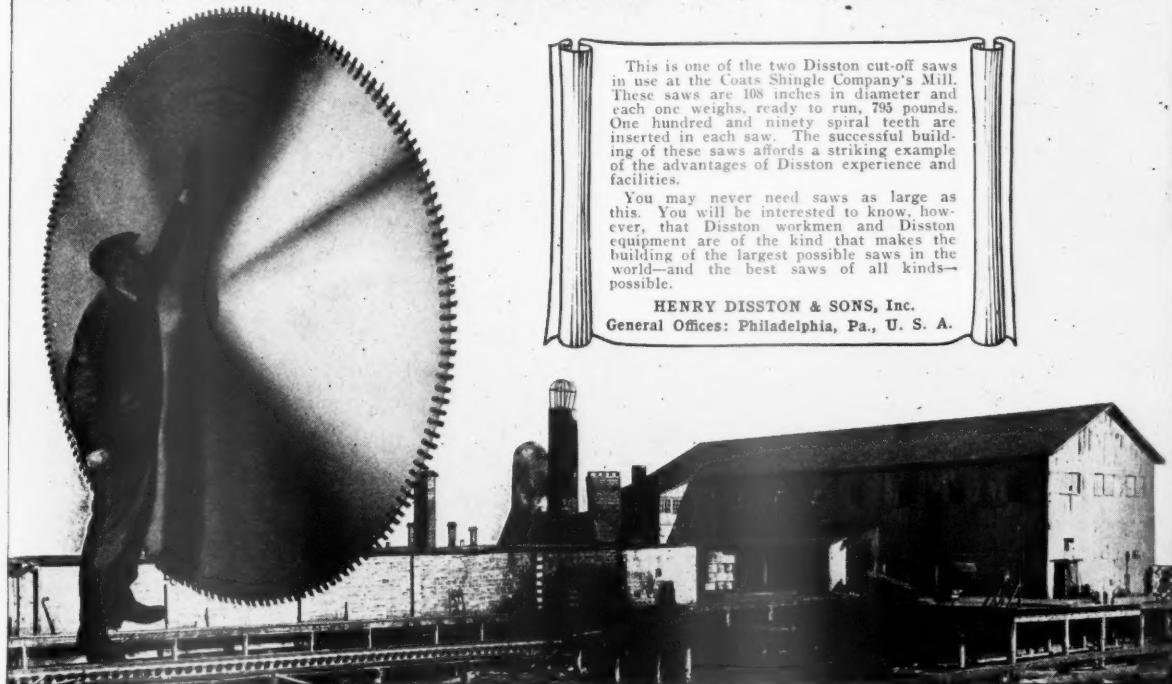
NEW YORK

NEVER before in America has there been such a popular interest in forestry as is shown in the determination of New York State communities to plant nearly a quarter of a million trees in public forests this spring," said Warren B. Bullock, Director of Forest Extension at The New York State College of Forestry. "This college alone has all it can do with public planting this spring, and in the supervision of several private projects of importance. Here is the list of work already scheduled to be supervised by the foresters from this institution: In Otsego County, the township forest idea will be started with the planting of 50,000 trees, in several localities, with an additional planting of 50,000 by a private owner who wants to do his share toward improving the county. Chenango County is also to have public forests, and plans to plant nearly 50,000 trees this spring. It already has had an acreage given in various parts of the county for five times this number of trees, but the work will be done in annual installments. Herkimer County will plant probably as many trees, in scattered small tracts.

"Malone will plant the first tract in what will be a big city forest, planted as are those of the southern counties, to produce a future cash revenue to the public, and its first year's planting will be 40,000 trees.

"The college itself is completing an arboretum of 20,000 trees within the city of Syracuse, and will supervise the planting of 30,000 trees for a lumberman who wants to try forestry at Lacona.

THE LARGEST SAWS IN THE WORLD



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NEW ORLEANS, LA.**

NATIONAL HONOR ROLL, MEMORIAL TREES

Trees have been planted for the following and registered with the American Forestry Association, which desires to register each Memorial Tree planted in the United States. A certificate of registration will be sent to each person, corporation, club or community reporting the planting of a Memorial Tree to the Association.

CINTONELLE, ALA.

By Mrs. Mary Blewett Carothers: W. H. Row, Le Baron Rogers, Howard Johnson.

UNION SPRINGS, ALA.

By Service Star Legion, National Defenders Chapter: Eldridge M. Coke, Jim Faulkner, William Otis Wells.

LODI, CAL.

By Federation of Women's Clubs: Capt. Clyde H. Needham, Capt. Wilbur Hugill, Virgil Pierce, Vernon White, Henry Tremberger, James Miller, Sgt. Ralph Gillespie, Corp. Harold Cary, W. Rossi, Alexander Linde, Herbert Hovard, Charles E. Walther, John G. Anderson, Private Beard, Martin Troy, Roy Seltzer, Henry Wittmeier, Joseph Drabkin, George Mauch, Charles R. Patten, Walter Sievers.

LEWES, DEL.

By Civics Committee, Zuanendael Club: Capt. Albert Reese Thompson, John Long Morris.

MIDDLETOWN, DEL.

By High School: J. J. Hoffecker, Jr., Rupert M. Burstan, David Manlove. By Negro School: Jeremiah Jackson.

NEWARK, DEL.

By Waverly Club, Women's College: Louis Thorpe, Watson Lenderman, Thomas W. Eaton, Edgar Chalfonte. By Delaware College: William Norman Brennon.

OGLETHORPE, GA.

By U. D. C. Chapter No. 1407: Macon County soldiers who served in World War.

KEWANEE, ILL.

By Woman's Relief Corps: John Duncan.

ROCKFORD, ILL.

By G. J. Bochland: Earl Hovey, Irvine Rubin, Gunnard Anderson, Herbert Anderson, Elmer Nelson, Leon T. McNish, Evan Rees, Charles W. Arnold, Geo. Abney, Oscar Asprotho, Harry L. Anderson, Victor Baughman, Arvid Johnson, Gust. Johnson, Clayton Ingersoll, Harry Hayes, Henry E. Higgins, Lubbert Hayenga, Leonard C. Hageline, Cornelius Heronimus, Max Gould, A. E. Granberg, Will J. Flowers, John Dohlan, Geo. C. Dohler, Yngve Alf Bengton, Archie A. Bird, Dr. J. A. Brand, Frank Cherichetti, Joseph Ciecierski, Lewis Craig, John P. Dougherty, Walter Craig, Gran O. Damon, Frank Ellis, Alexander Folz, Walter C. Francis, Thomas L. Graham, L. Mardi Whelar, Clyde Spidell, James E. Lynch, Clinton H. Morris, Stephen Mitchell, Thomas Mitchell, Ben. F. Hill, Sgt. Walter T. Graham, Carl H. Swenson, Gilbert D. Gridley, Giuseppe Fontana, Roy Coleman, Lowell Bartlett, James Stanley Brown, Walter Brennan, William Bowers, William Bobian, Elmer Burdick, Jas. Carlton Van Duzer, Hilmer T. Tillstrom, Thos. Timmons, Henry A. Skinner, Williard Stevens, Arthur Sandstrom, Einer

Pearson, Fred Peterson, David Nyquist, Bert Nelson, Henry Wm. Nelson, Collins S. Nash, Edgar McMahon, Simon Thomas Murphy, Edward R. Miller, Arthur John Lindstrom, Clarence Lindblade, Alfred B. Larson, John Janzen, Geo. Johnson, Tanner W. Johnson, Harry S. Johnson, Herman Johnson, Arvid Holmberg, Ross Heffernan, Fred Hanson, Harold J. Hanson, Milo L. Haley, William Gorham, Clayton M. Goodman, Eugene F. Egan, Edwin Ralph Estep, Joseph A. Dion, James B. Davidson, Benj. Clayton, Eugene J. Barloga, R. W. Bergquist, Reuben L. Belshaw, James W. White, Louis H. Kreuter, Ralph H. Blackinton, Fred M. Ziegler, Fred E. Woodward, Harry L. Baker, Leslie Boyle, Robt. G. Williamson, Martin A. Lolling, Jas. McCartney, Gust. A. Osberg, Andrew Oscarson, Ole T. Olson, Anton Harry Sjoholm, Tony Sparacino, Carl H. Swenson, Carl A. Larson, Warren Lamont, Alfred Koss, Arnold H. Korte, John L. Jacobs, Clarence E. Jamison, Edward J. Davis, William Dwyer, Jr., Paul Dorsey, Andrew Connell, Giuseppe Ciaccia, Wm. T. Cunningham, Arthur Anderson, Omar Andriessen, William Mandeville, H. W. Kjellgren, C. M. Best, Fred Peterson, Earl Leslie Minard, Harry L. Anderson.

WASHINGTON, IND.

By Washington Rotary Club: Claude F. Palmer.

MARION, IOWA.

By Cary Club: To Marion Soldiers.

ORONO, MAINE.

By Maine Forestry Club, University of Maine: The 38 Maine Students.

SPARKS, MD.

By Halton Garden Club of Baltimore Co.: Sgt. Raymond W. Billingsley.

FRAMINGHAM, MASS.

By Framingham High School: Herbert D. Howe, David R. Buck, Russell J. Mahoney, Leonard Stearns.

GRAND RAPIDS, MICH.

By Mr. Julius Tisch: Rolland W. Tisch, Bertha B. Blasen.

ISHPEMING, MICH.

By Service Club: Walfred Nyland, John Vidlund, Cecil Fowler, Louis Edward Umuth, Richard Johnson, Helmer Jaedecke, Arthur Spender, George Sibley, Edwin Goethe, Rudolph Larson, Edward Thornton, Henry Huot, Paul Bargh Cooley, Edward Lind, Arthur Berola, William Joseph Whittey, Henry Pelto, Jay Holland.

MARQUETTE, MICH.

By Woman's Welfare Club: Carl F. Anderson, Myron Asire, Rupert Barth, Francis Barshaw, Michael J. Contway, Leo Dame, Frank Gauthier, Frederick J. Gauthier, George Hall, Earl Gustafson, Richard M. Jopling, A. Bartlett King, James G. Lenski, Frank Lewis, Alfred Longtine, Chas. J. McFarland,

Morgan Mowick, James J. O'Neill, Walfrid Nyland, Loreo Parent, Arthur Poserier, James Rice, Samuel P. Robinson, Anthony Snider, Frank Snider, Howard Swanson, William A. Thomas, John Henry Vidlund, Thure E. Windoft.

CRAWFORD, NEBR.

By Memorial Tree Committee: Wm. F. Roberts, Jr., John C. Swinbank.

BORDENTOWN, N. J.

By Bordentown Military Institute: Howard S. Boyer, Elwin F. Chapman, Edward J. Cottrell, Steever R. Day, Gordon Dodge, Benjamin N. Eshleman, Louis K. Godman, Charles L. Hunt, Davis W. Lusk, Scott McCormick, Oakley W. McKinney, D. Edgar Maxwell, Bradley C. Newton, Jay H. Olhausen, Carroll G. Page, James R. Shoemaker, Ralph E. Shoemaker, Henry B. Smith, Willard D. Straight, Leo L. Throop, Theodore W. Todd, Frederick Van Deusen.

NEW YORK CITY.

By John Fraser Bryan Post, American Legion: Lieut. Joia Fraser Bryan.

PHILADELPHIA, PA.

By Episcopal Hospital: Alice Ireland, Rev. Dr. Louis C. Washburn. Christ Church: Lieut. Joseph F. Bellak, 2nd.

PLEASANTVILLE, PA.

By Women's Club: Arthur B. Ames, Earl Ames, Earl C. Atkinson, Donald Bryner, Harry Burrows, Roy Bailey, Ferris F. Baker, Harry Botsford, Jotham Bumstead, Lee Bills, John Berrington, Bertha Carson, Harry L. Carson, Ralph Covell, Charles Carlin, Charles Cross, Charles Carnahan, Arthur Dutton, Arthur Dunham, Ray E. Dunham, Newel Dean, Alex Emmick, John Fleming, Fred E. Holtz, Albert Lyons, John Holtz, Donald Lane, Bert Loop, John L. Litzinger, Sherwood Kerr, Lawrence Eakin, Harold McIntyre, Manley E. McDonald, George McDowell, Leonard Mason, Oliver Otto, Thomas L. Mitchell, George Ohl, Walter Rabe, Francis O. Rooker, John Runbaugh, Rolland M. Rumbaugh, Harold Rifenburg, George Ralston, James Ralston, Robert M. Ralston, Ernest Roth, Thane Skinner, George Strang, Stanley Sheldmadine, Walter Sutton, Manley Starkey, Clifford Schmidt, Casper Spangler, Lewis Stroup, Wayne Smith, Lewis Stearns, Fred Sterling, Enos Sterling, Lawrence A. Vincent, Grover Voorus, George A. Waddell, James C. Waddell, Robert R. Waddell, Wm. F. Waddell, George D. Watson, Ralph Watson, Arthur Wagenknecht, Clifford Watson, Roscoe Ward, Frank Weekley, Wayne Young, Oliver S. Spence, Harry E. Cole.

TEXARKANA, TEXAS.

By Central High School: Emmett J. Scott. Whitaker School: John L. Steitler. Highland Park School: Travis D. Cook. Sacred Heart Academy: Rev. A. Barbin, Rev. E. F. Campbell. Rose Hill School: Our Soldiers High School: J. C. Watts. Forestry Committee: Bowie and Miller Counties. Central School: Collier Morrow.



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SAVE AND SUCCEED

CANADIAN DEPARTMENT

BY ELLWOOD WILSON

PRESIDENT CANADIAN SOCIETY OF FOREST ENGINEERS

AN Imperial Forestry Conference will be held in London from July 7 to July 22. The opening session will be held at the Guildhall and will be presided over by the Lord Mayor and addressed by Lord Lovat. On the 8th, 9th and 10th tours will be made through the Crown Forests of Dean and Tintern. On July 12 the official sittings of the conference in committee on Forestry Policy will begin and the following subjects will be discussed: "The Forest Authority," "Responsibility of the State for Forest Policy," "Methods and Problems of Technical Forestry, Education and Research," "Empire Forest Resources and Consumption," and "Scope for Imperial Development." From the 14th to 19th of July, a tour of Scotch forests will be made, visiting Edinburgh, Birnam, Speyside, Beaumont and Novar. On the 20th the Conference will conclude its committee work, and on the 21st will discuss the question of an Imperial Forestry Bureau. On the 23rd Windsor Forest will be visited, and on the 24th to 26th visits to Ireland and the private estate forests will be arranged. This will be a very important conference and foresters and others interested in the subject have been invited from all over the Empire. Forestry matters within the Empire will be discussed along broad lines and the question of providing for the supplies for the future will be carefully gone into.

Among the Canadian Foresters who will attend the conference are Mr. M. A. Granger, Chief Forester of British Columbia; Mr. Avila Bedard, Assistant Forester of Quebec, and Robson Black, Secretary of the Canadian Forestry Association. Other prominent Canadian foresters have been invited.

The crop of Scotch pine seed in Sweden was practically a failure this last year and no seed is obtainable from that country.

The whole question of source of seed for reforestation is of great importance and this is being shown most strikingly in the plantations of the Laurentide Company. Plants obtained from nurseries using seed from Denmark, probably of German or South Swedish origin are showing bad form, being crooked and ragged in the case of Scotch pine, and the spruce plants, Norway, from seed from the same source, are suffering from frost and sunscald. On the other hand, plants raised from seed obtained from northern Sweden are much harder and thrifter in every way. Those undertaking commercial planting on a large scale would do well to insist on certificates of origin of seed and plants

and insist on getting them from the proper locality. Experiments are being carried out with western white spruce in eastern Canada and so far the results shown are good.

The forestry work of the Abitibi Pulp and Paper Company is proceeding well. A detailed base map of the company's holdings is in progress. An intensive regeneration survey in co-operation with the Commission of Conservation is making good progress. Growth studies for various species and volume tables are well under way. Field investigations to determine the possibility of reducing the logging waste are being made and an exploration of the territory from Cochrane to James Bay has been made. The nursery work has commenced and a nursery is under construction which will ultimately have a capacity of two million trees per annum. The company has decided not to start an aviation department this season.

The Brown Corporation hydroplane was assembled at Sammamish and made its first trip to the summer base at the Gouin Dam on May 15. It will be used in reconnaissance and photographic mapping work.

The Laurentide aviation work has commenced and daily flights are being made taking photos of construction work on the new water supply system, progress of drives, lands to be bought for reforestation and timber holdings. An up-to-date photographic laboratory has been installed.

Dr. Unwin, of London, a member of the Canadian Society of Forest Engineers, has proposed the formation of an Imperial Society of Foresters and the matter is under discussion. This recalls the attempt made by the writer in 1911 to form an International Society of Foresters.

An investigation of the conduct of the Department of Lands and Forests of Ontario under the late Government is under way and the returns made by licensees of Crown timber lands are being carefully scrutinized. So far the investigation shows that the supervision of lumbering operations was very lax and that little care was exercised by the Government to collect all that should have been paid in. It is hoped that the new Government will begin a rational and business-like management of its immensely valuable timber resources.

The forest fire situation in New Brunswick has been very difficult this spring owing to the continued dry weather. A large fire has occurred on the lands of the J. B. Snowball Company. Effective effort

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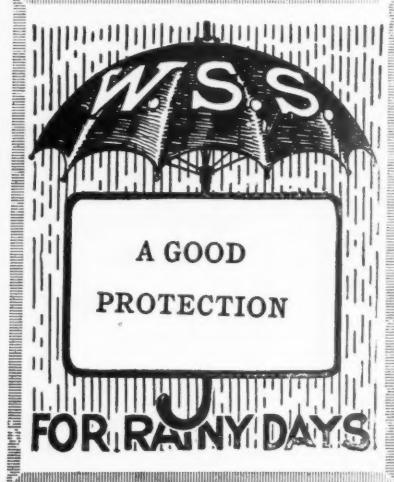
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is being made by the Forestry Department to prevent and control the fires.

While the weather has been dry in Quebec no very serious fires have been reported. One of about five square miles, said to have been set by the Canadian Government Railways has been reported. A trip made by the writer over part of this line during the week of May 22 to 27, showed some small fires but not as many as usual.

The Canadian Forestry Association has started a "Planting Car" on a tour of the Prairie Provinces. This car will carry a model nursery and show young plants ready for setting out and the accompanying lecturer will explain the necessity for planting windbreaks on the prairie and give talks on fire protection and general forestry. The Association has also engaged an assistant secretary and has moved into larger offices.

Clyde Leavitt, Dr. C. D. Howe, Professor Millar, Professor McCarthy and Mr. G. A. Mulloy, of the Commission of Conservation, visited the plantations and experimental plots of the Laurentide Company recently. Mr. Ben Avery, Forester for the Spanish River Pulp and Paper Company, and Mr. Simpson, the company's pilot, were also visitors. The Spanish River Company will start a nursery with an output of 500,000 trees for forest planting this coming fall. They have purchased a Dayton-Wright machine and will try out aerial photography for forest mapping.

Messrs. Morency and Relyea, assistant pilot and photographer for Price Brothers Company, visited the Laurentide Company to look into the aerial photographic methods employed by them.

The Canadian Pulp and Paper Association has issued a bulletin, "Government Restrictions upon the Use of Pulpwood Cut from Crown Lands of Quebec, Ontario and New Brunswick." The Canadian pulp and paper manufacturers are almost all taking active steps to conserve and utilize to the best advantage their forest resources and are reforesting on a large scale.

TIT FOR TAT

I often pass a gracious tree
Whose name I can't identify,
But still I bow, in courtesy;
It waves a bough, in kind reply.

I do not know your name, O tree
(Are you a hemlock or a pine?)
But why should that embarrass me?
Quite probably you don't know mine.

(The Bowling Green Column, in The N. Y. Evening Post.)

Plant Memorial Trees

BOUQUETS

"I am very much interested in the propagation of our forests and reforestation of vacant land, and feel that I owe a great deal to your magazine, for it has helped me greatly."

DR. G. S. FOSTER.

"I wish I had subscribed sooner to this publication, as I see I have been missing some great articles. Along with my bird lectures, it seems as though AMERICAN FORESTRY is an absolute necessity, as the two go hand in hand."

H. H. COFFEY.

"The purpose of your organization is indeed a worthy one and should receive the hearty co-operation of every American citizen. We sometimes fail to appreciate the value of these gifts of nature and do not realize until too late what they mean to our national existence."

H. E. COOK.

"Your proposition on forestry is a wonderful thing and we are interested in seeing it put through. I am sending you a check herewith for one hundred dollars, for a Life Membership for the Booraem Powell Lumber Company."

H. BOORAEM, Manager.

"AMERICAN FORESTRY is one of the most interesting publications I get."

W. S. McCREA.

"AMERICAN FORESTRY is too good to lose a single number, so I wish my renewal to reach you in time to take care of the expiration of the present subscription."

CLEMENT W. BAKER.

"The articles in AMERICAN FORESTRY on the uses of wood—past, present and future, and the very great importance of wood and forestry in our national life, are certainly some of the best literature I have read in a long time."

P. C. KULLMAN.

"The American people have been backward in the conservation of their forests. AMERICAN FORESTRY magazine is a high-class publication, issued by the American Forestry Association and circulated among all members from their headquarters in Washington, D. C. It is well fitted to serve as a valuable educational medium for the encouragement of the planting and preservation of trees."

LOUIS BARTLETT,
Mayor of Berkeley, Calif.

"AMERICAN FORESTRY has contributed much to the preservation of trees and plants in all parts of this country. This magazine is able to gain and retain the interest of its readers, and is to be recommended to all who are and who should be concerned with the preservation of our forests and with the reforesting of our hills and mountains."

M. C. JANES,
Asst. Supt. Berkeley, Calif., Public Schools.

IMPROVE WOODLANDS

LACK of proper thinning and cutting is a common cause of woodlands being unprofitable, according to a recent bulletin entitled, "Making Woodlands Profitable in the Southern States," issued by the United States Department of Agriculture. Nature usually overcrows trees in a given space, says this publication, and so steps should be taken to give them sufficient light and soil moisture to thrive and become profitable.

By properly controlling the number of trees on a tract it is possible to increase their rate of growth and eventually their size. Except for the production of cordwood, a few large trees on a given area are usually more desirable than many small ones. If possible, valuable kinds of wood should be grown in preference to common woods, which bring lower prices. Woodlands in this country, as a rule, contain many crooked, forked, and diseased trees, which should be replaced by straight, sound ones. Soon after a cutting trees show an increased growth and the whole woodland rapidly increase in value by the elimination of inferior trees.

With an active market for cordwood and for fence posts, poles, and lumber there is every inducement to clear out the inferior trees—diseased, dying, crooked, and less valuable kinds. Right cutting also includes the removal of large, sound trees whose growth is slow, because they are nearing or have reached maturity. The cutting should be done only at a time of favorable market conditions or when building or other timber is needed on the farm. Copies of this bulletin may be had by addressing the United States Department of Agriculture, Washington, D. C.

PAPER PULP FROM SEAWEED

"THAT the manufacture of paper pulp from seaweed is proving a profitable undertaking in Japan seems evidenced by the fact," says the U. S. Consul in that country, as reported by the Bureau of Foreign and Domestic Commerce, "that the only company manufacturing this pulp is building another factory. This concern was organized in December, 1919, and is producing, by a secret process, about 50 tons of pulp daily, which is largely used in the composition of cigarette paper. The new plant, when completed, will have a daily capacity of 150 tons of pulp. The present price is about five cents a pound."

TIMBER sufficient to build 2,750 new five room houses was destroyed by fires on the National Forests in California last season. Fifty-five million feet of California's available timber supply, worth more than \$133,000 on the stump, went up in smoke within a few short months.

**PATRONIZE
OUR ADVERTISERS**

MEMORIAL TREES FOR TRENTON

IN keeping with the movement of the American Forestry Association for the planting of trees in memory of fallen heroes of the Great World War, members of Company C, 104th Engineers, are planning a memorial planting in Stacy Park, Trenton. A tablet is to be erected in the center of six oak trees, to be planted to mark the memory of the six Trenton members of the organization who were killed in action.

Another planting of 180 oak trees along the Lincoln Highway is also arranged for, to perpetuate the memory of the 180 soldiers of Trenton and Mercer County who died in the war.

The suggestion of the Association has met with favor in other parts of the State, and the number of memorial trees will be greatly increased this spring.

A NOVEL IDEA IN TREE SURGERY

SO far as I know, the practice of tree surgery by dynamite is not yet usual, writes M. L. Adams, of Virginia. He says: My experience along this line may, therefore, be of interest. When we came to settle on this old farm, we found that the handsomest tree on the place was a great sycamore overhanging the spring. A fine, healthy growth of branches and leaves extended about three-quarters of the way up the trunk, but from that point the top was entirely dead, just bare boughs. We were not tree experts but we saw that top must go. To saw it off at such a height was manifestly impossible; well then, we would blow it off.

A good climber went up until he found the hollow which marked the beginning of the decay. A small charge was placed, the long fuse touched off. With the first "boom," half of the head toppled and fell to the ground. Two other charges completed the work.

"Take No Chances
With Camp Fires
Put Them Out."

TIMBER RESOURCES OF FRANCE

WHEN the lumber industry is organized in France's Colonial possessions, France will have an unlimited supply of timber of all grades available, says the *Fortnightly Survey of French Economic Conditions*, published by the French Commission in New York City. One million cubic meters of timber are cut every year in these colonies, continues this authority, this being equal to 424,000,000 board feet. Going into effect April 1, 1920, an export embargo has been placed in France upon certain wood products, including stavewood, logs one meter 10 centimeters or less in length, and also bush and fire wood, except under special license from the Ministry of Finance.

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AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

FOREST VALUATION—Filbert Roth.....	\$1.50
FOREST REGULATION—Filbert Roth.....	2.00
PRACTICAL TREE REPAIR—By Elbert Peets.....	2.35
LUMBER MANUFACTURING ACCOUNTS—By Arthur F. Jones.....	2.10
FOREST VALUATION—By H. H. Chapman.....	2.50
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LUMBER AND ITS USES—R. S. Kellogg.....	1.35
THE CARE OF TREES IN LAWN, STREET AND PARK—B. E. Farnow.....	2.15
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KEY TO THE TREES—Collins and Preston.....	7.30
THE FARM WOODLOT—E. G. Cheyney and J. P. Wentling.....	1.50
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R. Y. STUART, forest inspector in charge of the Western Division of Forest Management, U. S. Forest Service, and formerly an assistant district forester in this district, has resigned to accept the position of Deputy State Forester of Pennsylvania, under Gifford Pinchot.

BOOK REVIEWS

"Conservation Reader," by Harold W. Fairbanks. Price \$1.20, World Book Company, Yonkers-on-Hudson, New York.

It is necessary that children be trained in right ways of looking at Nature, otherwise the wave of enthusiasm for the conservation of our national resources will expend much of its force uselessly. The present generation not only has the obligations to transmit its inheritance of natural wealth as nearly unimpaired as may be; it must prepare the next generation for an enlightened stewardship. The need for a school text on this subject has been imperative.

That need is adequately met in Harold W. Fairbank's Conservation Reader. This is a real textbook, in which every phase of the subject is treated at such length as its relative value warrants. The author is an authority on conservation, and his book is a unit—not a compilation. The subject itself bears an unusual attraction, touching as it does, almost every natural science except astronomy; and this attraction is enhanced by the author's simple and interesting manner of presentation. The book was written throughout with a view to use in the schools and every page appeals to the pupils' interest. The text is illustrated with a great number of pertinent and most artistic photographs, including color plates of the passenger pigeon and the sage hen, and it is especially recommended for use by such organizations as the Campfire Girls, Junior Audubon Societies, Agassiz Associations, Woodcraft Leagues, and Boy Scouts.

The Adventures of Twinkley Eyes, the Little Black Bear, by Allen Chaffee, illustrated with pictures by Peter J. Da Ru, Milton Bradley Press, Springfield, Massachusetts. Price \$1.25.

In these very interesting tales, disguised in fiction form, the reader gets a taste of biology, botany, zoology and meteorology, woven into the experiences of Twinkley Eyes, one of the most delightful little characters ever created in animal literature. His adventures with his brother Woof, and their mother, Black Bear, teach him the vital lessons of life through experience, and their moral emphasis is clearly conveyed to the minds of young readers. The habits of the bear and other animals introduced in this book are faithfully portrayed, and the refreshing environment of green forests and open fields is sensed in every chapter. The book, while primarily written for children, whose taste it was the hope of the author to guide toward a love of nature and the things of out-of-doors, will be read with thorough enjoyment by grown-ups as well, and Twinkley Eyes has been made to vividly live in the pictures drawn of him and his friends by Peter J. Da Ru.

Trail and Tree Top, by Allen Chaffee, illustrated with drawings by Peter J. Da Ru, Milton Bradley Company, Springfield, Massachusetts, Price \$1.25.

In the introduction to this charming book, just from the press, we find that it holds, in true-to-nature form, some of the comic, daring or pathetic exploits of Mammy Cottontail, Jimmy Crow and brave grumpy old Fatty Chuck, for whom Frisky Fox and the others kept things so lively. And here too, is the Boy from the Valley Farm, who knew just what to do in some of the emergencies that befell his furred and feathered friends. Trail and Tree Top will be welcomed by all little folk who love the woods-people, for while there are a few big words for the while there are a few big words for the grown-ups, these are all explained for the younger readers.

"Going Afoot," by Bayard H. Christy, from the Association Press, of New York, will be welcomed by the clan of the strenuous and the lovers of life out of doors. They will gain from this little book a new appreciation of the joys of the road and will find it full of practical and helpful suggestions on when, how and where to walk. Trampers will read with much interest the accounts of famous walking clubs in America and directions for the organization and conduct of such clubs.

LARGEST SAWS IN THE WORLD

WHEN it was suggested that Henry Disston and Sons make some circular saws 108 inches in diameter to be used in cutting shingle bolts, most people laughed and thought the idea crazy. The strain would be too great, no mandrel could hold, a saw with a surface so large could not run straight and true. But even as Marconi accomplished his idea of the wireless telegraph after all the world mocked, so has the Disston firm done what seemed impossible. On April 10, 1920, two circular saws, 108 inches in diameter, made in the Disston plant in Philadelphia, began their first run in the Coats Shingle Mill at Hoquiam, Washington, and they ran perfectly. Special machinery was necessary to carry them. The power turned on, they began to run slowly, then as the speed grew the hum increased until it sounded like the noise of a swarm of bees. The serrated edge, traveling at a speed of 130 miles an hour, cut through big Coast logs with an ease and rapidity that astonished experienced mill men. With an ordinary saw the shingle weavers frequently had to wait for bolts to accumulate, with the installation of these saws the crews in the cutting and packing departments were fairly swamped.

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FORESTS AND IRRIGATION

AN excellent illustration of the relationship that exists between forested areas and the irrigation problem is the following:

Tip a table to the angle of 45 degrees and cover its surface with sponges to correspond with the layer of decomposed vegetable matter in a forest. Pour water over the table and a large proportion will be retained in the sponges to ooze out gradually. Remove the sponges and repeat the process of pouring water over the table. Of course the water will immediately seek the lowest level. Forests on mountain slopes have the same effect in retaining water that the sponges had. Water from winter storms held back by the forest's decomposed vegetable matter, enters the ground, and oozes out gradually later in the year.

From the foregoing, the necessity of protecting our forested areas from fire and the necessity of having mountain slopes, not valuable for agriculture, covered with forest trees is readily understood.

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EDWARD F. BIGELOW, Managing Editor

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AMERICAN FORESTRY will gladly print free of charge in this column advertisements of foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

POSITION wanted by technically trained Forester. Have had fourteen years experience along forestry lines, over five years on the National Forests in timber sale, silvicultural and administrative work; three years experience in city forestry, tree surgery and landscape work. Forester for the North Shore Park District of Chicago. City forestry and landscape work preferred, but will be glad to consider other lines. Can furnish the best of references. Address Box 600, care American Forestry Magazine, Washington, D. C.

YOUNG MAN recently discharged from the U. S. Navy, wants employment with wholesale lumber manufacturer; college graduate; five year's experience in nursery business; can furnish best of references. Address Box 675, care American Forestry Magazine, Washington, D. C.

RECENTLY discharged from U. S. Army, young man wants position with a firm who has use for a lumber tallyman and inspector. Has a good education, 11 years' practical experience in lumber and can furnish good references. Address Box 880, care of American Forestry Magazine, Washington, D. C.

ARBORICULTURIST is open to an engagement to take charge of, or as assistant in City Forestry work. Experience and training, ten years, covering the entire arboricultural field—from planting to expert tree surgery—including nursery practice, and supervision in the care and detailed management of city shade trees. For further information, address Box 700, care of American Forestry.

WANTED—Position as Forester and Land Agent. Technically trained forester, 35 years old. Practical experience along all lines included under the duties of the above positions. Former Captain, Field Artillery. Address Box 840, care American Forestry, Washington, D. C.

A FORESTRY graduate with several years experience in forest work and at present employed along technical and administrative lines desires responsible position with private concern operating in and outside the United States. Address Box 870, care of American Forestry Magazine, Washington, D. C.

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POSITIONS OPEN

MAN WANTED with technical training and practical experience sufficient to make him thoroughly competent as a developer of Park plans, and also Park Superintendent—both in road construction, planting and landscape work—and Director of Forestry Service upon the public streets and parks of the city. Address Box 910, American Forestry Magazine, Washington, D. C. (6-9-20)

WANTED—Man capable of Supervising Slack and Tight Barrel Plant; Purchase and Inspect Cooperage Stocks; Develop Boxes, Crates and other Packages for miscellaneous articles. State experience, salary wanted and references in first letter. Address Box 123, care of AMERICAN FORESTRY MAGAZINE, Washington, D. C.

CAMPING GROUNDS IN NATIONAL FORESTS

GETTING THE MOST OUT OF THE WOODS

PROBABLY no one piece of woods work has done so much to acquaint the public with forest fire protection and secure its support as the improvement of camping places in the National Forests, says "The Forest Patrolman," published by the Western Forestry and Conservation Association, in its last issue. The public is appreciative of rude conveniences for its comfort and everyone is thereafter more careful with fire in the woods. The National Forests are public property and as such are to be administered so as to secure the greatest public enjoyment of their resources, including fishing, hunting and camping. Improvements in the way of clearing, and rough fire places and garbage pits have been made on over 344 camp grounds in Oregon and Washington in the National Forests, these improved camp grounds being visited annually by nearly 350,000 people. A surprising amount of public appreciation has been expressed for the camp ground work, say many forest officers, and the result has been a greatly increased public understanding of the objects of the National Forests, an increased co-operation and a better support in fire protection work.

TIMBER RESOURCES OF ALASKA

THE timber in Alaska is much more suitable for pulp and paper than it is for saw timber, says the British Consul at Seattle in a recent report. "Consequently," he adds, "on account of the unlimited amount of cheap wood and immense quantities of cheaply installed water power with deep water transportation to the doors of the world, southeastern Alaska in the comparatively near future must become one of the great paper centers of the world." The best timber in the coastal region or wet belt is found in the Tongass National Forest which comprises nearly all of southeastern Alaska. It is estimated that this region contains 70,000,000,000 board feet of merchantable timber, of which hemlock makes up 65 per cent; Sitka spruce, 20 per cent, red cedar, 7 per cent, yellow cypress, 5 per cent, and other species, 3 per cent.

During 1918, nearly 18,000,000 board feet of hemlock piling was cut on the Tongass National Forest, this being used chiefly for fish traps and wharves. From 30,000,000 to 40,000,000 feet of Sitka spruce is cut annually on the Tongass and Chugach National Forests.

During the war, Alaska furnished large quantities of the very best airplane lumber that was secured, this being practically the only lumber that Alaska has ever exported.

THE emphasizing of the wasteful lumbering methods of the past is of little service unless the practicability of better measures can be shown. Where economical logging methods are being used they should be given full recognition by all conservationists, and given earnest consideration by operators. An instance of close utilization is evidenced on the limits of a company operating in a modest way in the Parry Sound district. This company secured a block of timber, consisting of mixed hardwoods and conifers, situated near the mill of another company. The first mentioned company let out its woods operations to a sub-contractor and is proceeding to log the area very cleanly. The thoroughness of the operation is shown in the disposal of the products. The softwood logs go to the neighboring mill; the hemlock ties (hewn) to the railway company; the spruce and balsam pulpwood to a pulpmill at a considerable distance; the basswood logs, as also any good balm-of-gilead logs, go to New Jersey for match stock; the birch logs go to Montreal for export to Europe, for use as veneer, and the other hardwoods, including white oak, ash and elm, are also disposed of. In addition, cedar poles are taken out, the hemlock bark is shipped to tanneries near Toronto, and hardwood waste is used as fuel in its camps. This operation, therefore, may be said to represent the maximum of close utilization. This timber license, of course, is close to a railway, but there must be many opportunities for other such intensive operations throughout Ontario.

Close utilization is also adopted by some of the chemical companies. They operate sawmills in conjunction with their wood distillation plants, and have logging railways, one of which is 13 miles long. They saw both softwoods and hardwoods into lumber, carbonize smaller hardwoods for chemicals, and use inferior cordwood and slabs from the mill for fuel to heat their ovens. One company at least is about to experiment with the carbonizing of hardwood slabs.

These examples include the logging of hardwoods, which is necessary to solve present forestry problems. It seems probable that more companies could be operating logging railways and removing hardwoods when the present prices of finished products are considered. If logging railways are not feasible further experiments with driving hardwood logs might be carried out. Many companies have already successfully driven hardwoods for short distances, after leaving the logs in the bush for a year to dry out.—(A. V. Gilbert, in *Conservation*.)

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From letter of Mr. Walter Meigs, President and General Manager, we summarize the following:

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PAPER PULP FROM PAPYRUS GRASS

ARRANGEMENTS for the manufacture of paper pulp from papyrus grass in Zululand are now in progress, says Vice Consul Charles J. Pisar, of Cape Town. A Norwegian company (Walmer Papyrus Pulp Company) has secured a concession over several hundred square miles from which to reap all reeds and papyrus grass, which are considered to be excellent raw materials for the manufacture of paper pulp. The company is capitalized at £160,000 (\$779,000). A factory capable of turning out 6,000 tons of pulp a year is now being erected at Umfolosi. Most of the machinery and equipment was obtained in the United States.

The company intends at first only to manufacture paper pulp. It is estimated that it will take fully 40,000 tons of raw material to produce the 6,000 tons of pulp, but as the growth of this grass is perennial, and the area where it is found is so extensive, an abundance of raw material is assured each year. The papyrus has to be cut by hand in the same way as sugar cane. The grass is dried, passed through a cutting machine, and then pressed and limewashed. An abundance of cheap colored labor is available. Later on the company intends to extend its operations to the manufacture of paper, textiles, and bags.

TIMBER HELPS POOR LANDS

TIMBER is essentially a poor-land crop. Steep slopes, poor soil, rocky land, unusual corners, gullied and wooded tracts—all these afford opportunities for growing timber profitably. A careful survey of the average farm will reveal a surprising number of spots of this sort which can be utilized to advantage. If they do not already have trees, planting them with the proper varieties will materially increase the value of the land.

Certain kinds of trees, like the locust and the acacias, build up poor soil through the nitrogen-gathering bacteria in the root nodules, according to the Forest Service, United States Department of Agriculture. The soil building power of trees on slopes is a fact which the farmer should not overlook. Steep lands, which have been cleared of timber at much expense, after being cultivated for a few years often became gullied, and the rich lands adjoining are covered with deep deposits of sand. The surest and cheapest method of protecting such slopes is to maintain forests on them.

Small gullies can be stopped up by closely packed brush and tree tops, anchored by stakes if necessary. Large, open gullies are checked successfully only by planting over the entire gully basin, supplemented by low brush dams across the larger units of the gully.



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FOREST SERVICE BOOSTS ALASKA

THE Forest Service is definitely committed to the policy of doing its utmost for the fullest development of the timber resources of Alaska. This statement, made by District Forester Cecil, upon his return from an important conference in Seattle, is fully borne out by the recent decision to make more flexible the present timber sale contract requirements of the Forest Service to better fit the unusual Alaskan conditions.

Mr. Cecil brought out the fact that although the Forest Service during the past ten years has sold some 400 million feet of timber from the Alaskan National Forests and that the Service has consistently encouraged the sale of Alaskan pulp woods, that due to the present seriousness of the newsprint situation, a more flexible policy is now justified for the Territory. The new policy provides for granting contracts for sufficient timber for a 30-year cut, and makes provision that where additional timber is available, a 15-year additional supply will be reserved for existing pulp plants.

The new contracts, the District Forester emphasized, are to provide for a readjustment of prices at intervals of five years after cutting begins, the first readjustment to be made seven years after signing the contract, if the full two-year period allowed for plant construction has been used. In addition, a maximum price is fixed which in no case will be exceeded in the readjustment covering the second five-year period. A third point of the new policy is that the readjusted pulpwood rates are to be based on current pulpwood values in southeastern Alaska.

The whole aim of the new policy, the District Forester stressed, is to make clear that the Forest Service is willing to make every effort consistent with existing federal laws to bring about the fullest development and use of the pulp timbers of the Alaskan National Forests.

IMPORTANCE OF FARM WOODLOTS

ABOUT half the fuel used on farms in general is furnished directly by the farm in the form of wood. The average farm family uses annually between 9 and 10 cords of wood for fuel, in addition to which about 3 tons of coal is bought. The wood, furnished almost altogether by the farm, represents a very considerable item. The farm woodlot should not be overlooked by the farmer in planning for the economical utilization of the resources of his farm, says the United States Department of Agriculture.

"Before
You Leave
A Camp Fire
Be Sure It's Out."

NATIONAL FOREST FEES

THE nineteen National Forests of Idaho earned \$463,070 in fees during the fiscal year ending June 30, 1919, of which 25 per cent has been remitted to the state for distribution to roads and schools in counties in which the forests lie. In the California district, including that state and a small part of Nevada, the Forest Service receipts for the quarter ended September 30, have been \$147,995 and in the district embracing Oregon, Washington and Alaska, \$115,134 was collected during the same period. Receipts for the entire Forest Service for the quarter named were more than half a million dollars. These receipts are fees from rental permits for grazing, water power privileges, sites for hotels and similar buildings, etc.

"Forest Fire Season
Take No Chances
With Fire."

WEALTH OF TRANSCAUCASIAN FORESTS

THE forest vegetation of Transcaucasia, which covers seventeen per cent of the total area, is such as to place it among the richest of forest countries, says the Trade Commissioner at Constantinople, in a recent report of the Bureau of Foreign and Domestic Commerce. The value and extraordinary variety of species (366 different species) which are to be found in these forests as well as their commercial importance invite closest attention as it is obvious that the forests will in the near future be eagerly sought in foreign markets. Negotiations have already been opened by representatives from Poland and Italy and by groups of native capitalists with a view to obtaining concessions to exploit these forests. These contractors who have made a careful study of the local timber wealth believe that Transcaucasia will play an important part in supplying European markets with lumber for construction and that such developments will be active after the delays and damage caused by the war. Firewood, lumber and timber were already, before the war, among the most important articles of merchandise carried by the railways of Transcaucasia.

The species of woods most commonly found and of the greatest value are the resinous trees, pine, fir and spruce, the last represented in the Caucasus by a species called oriental spruce, remarkable for the fineness of its grain and furnishing, in addition to saw wood for building, wood highly priced in the manufacture of musical instruments. The forests furnish also many by-products of great commercial value such as tannin and gallic acid, trees and bushes which produce excellent organic materials for dyeing, vegetable oils, and plants with curative and valuable chemical properties.

